HONG KONG MONETARY AUTHORITY
香 港 金 融 管 理 局

HALF-YEARLY MONETARY AND FINANCIAL STABILITY REPORT

September 2020

This Report reviews statistical information between the end of February 2020 and the end of August 2020.

Half-Yearly Monetary and Financial Stability Report
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1. Summary and overview

The world economy is experiencing an unprecedented shock amid the novel coronavirus (COVID-19) pandemic. The current recession is the deepest since the Great Depression and the path to recovery is subject to substantial uncertainty. While large-scale fiscal and monetary accommodation has helped mitigate the impact on the economy and financial conditions, the potential longer-term side effects stemming from the debt build-up and "low-for-long" monetary policy remain to be seen.

The Hong Kong foreign exchange and money markets continued to operate in a smooth and orderly manner. With the repeated triggering of the strong-side Convertibility Undertaking and growth in total deposits in the first seven months of 2020, no significant outflows from the Hong Kong dollar or the Hong Kong banking system were observed during the review period. Total loan growth increased slightly during the first half of the year, while activities in the residential property market picked up in the second quarter before moderating again in July and August.

Looking ahead, uncertainties over the path of global and domestic economic recovery amid the pandemic, and rising US-China tensions will continue to pose significant challenges to the Hong Kong banking sector. As these risk factors may continue to linger, banks should carefully assess the longer-term impact on the asset quality of their loan portfolios, particularly as the recession may weaken corporates' and households' repayment ability.

The external environment

The global economy plunged into recession in the first half of 2020, as lockdowns and social distancing measures to contain the COVID-19 pandemic brought real activities to a standstill. Unprecedented fiscal and monetary accommodation was unleashed to mitigate the impact of the recession and forestall disorderly tightening of financial conditions, but it also drove a strong rebound in financial markets that appeared disconnected from the weak underlying economic prospects.

Looking ahead, the global outlook remains clouded by heightened uncertainties. Without medical breakthroughs, the authorities in various jurisdictions will need to strike a delicate balance between reopening the economy and preventing a resurgence of the pandemic. At the same time, global geopolitical uncertainties have increased significantly. Against this background, financial markets may face greater risks of heightened volatilities ahead. In the longer term, policy responses to the pandemic may also risk exacerbating the global debt build-up, and the potential side effects of the "low-for-long" monetary policy remain to be seen.

In East Asia[1], real activities plunged in the first half of 2020. While signs of bottoming out have emerged since June, more data are needed to confirm a sustained recovery. In financial markets, the surge in risk aversion has triggered record-large portfolio outflows from the region, causing significant sell-offs in bond, equity, and exchange traded funds (ETFs). Box 1 found that an equity ETF with a low level of cash holdings is more prone to fire sales when facing substantial redemption pressure and will potentially amplify a financial market downturn. After experiencing abrupt capital outflows and US dollar funding stress during March to April, the regional financial markets have stabilised on improvement in sentiment and aggressive accommodation by central banks. Looking ahead, while regional governments have enacted fiscal and monetary policy support, the capacity and sustainability of this support will become a source of concern as the pandemic drags on. Meanwhile, corporate loan repayment capacity in the region has apparently weakened since the COVID-19 outbreak, raising concerns for corporate financial health further down the road.

In Mainland China, the economy bounced back to growth in the second quarter after a deep slump in the first quarter amid the COVID-19 outbreak. The economic recovery was primarily led by a strong pickup in investment following a gradual resumption of work and production. Whether the recovery continues hinges greatly on future developments of the pandemic as well as the tensions between Mainland China and the US. The latest consensus forecasts expect the Mainland economy will expand by 2.1% in 2020.

In view of the considerable uncertainties surrounding the development of the pandemic and global economic recovery, the government scrapped an annual growth target for this year while putting more emphasis on stabilising the economy and employment. To facilitate better monitoring of economic performance, Box 2 introduces a daily composite economic condition index, which closely tracks Mainland economic activities and has the advantage of being more timely than traditional aggregate-level indicators. Our daily index suggests that the Mainland economy continued to rebound but with increased volatilities. In addition, our index shows that while the economy was recovering, the expansion pace of economic activities had not yet reverted to the 2019 level.

The domestic economy

Hong Kong's economic recession deepened in the first half of 2020 amid the COVID-19 outbreak. Compared with a year ago, real gross domestic product (GDP) dropped by about 9% in the first half of the year, the steepest decline on record. The trade, retail and tourism-related sectors were particularly hard hit, recording a double-digit decline in activities. On a sequential basis, real GDP also declined at a record rate of 5.5% in the first quarter and roughly stayed at that subdued level in the second quarter. The outbreak had an adverse impact on almost all components of GDP – disrupting consumption, investment and external trade, and bringing tourism to a standstill. That said, trade in goods picked up slightly in the second quarter as production activities in Mainland China largely resumed.

In response to the pandemic, the Government swiftly launched relief measures of unprecedented scale to support enterprises and individuals and to safeguard jobs, including the HK$10,000 Cash Payout Scheme and the provision of wage subsidies through the Employment Support Scheme. The HKMA has also taken a three-pronged approach to bolster the banking sector in support of the real economy. The measures comprise proactive coordination with the banking sector to ease cash-flow pressures on enterprises and households, releasing buffers to boost the lending capacity of banks and ensuring that

[1] East Asia refers to the following seven economies: Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

banks have abundant liquidity to meet their needs and support domestic economic activities.

Local economic performance for the rest of 2020 is still highly challenging given the lingering pandemic. Nonetheless, increased public demand (e.g. government consumption) and the massive relief measures introduced by the authorities are anticipated to provide some support to the domestic economy. Taking into account the multiple headwinds, the Government and private-sector analysts revised downward their forecasts of real GDP growth for the whole of 2020 to a range between -6% and -8% and a mean of -6.8% respectively. This subdued economic outlook is subject to a number of risks and uncertainties as discussed above.

The labour market has come under significant pressure in the first seven months of 2020. The unemployment rate rose to 6.1% in July, surpassing the peak of 5.5% in the aftermath of the 2008 global financial crisis. The underemployment rate also climbed. On the demand side, Box 3 analyses the recent changes in labour demand using a timely big dataset of online job advertisements, and the results reveal that vacancies stayed low recently. Looking ahead, the Employment Support Scheme introduced by the Government should help retain jobs, but the labour market will continue to face challenges given the sluggish economic outlook.

Local inflationary pressures softened further alongside the deepened economic recession. In particular, the year-on-year underlying inflation rate decelerated from 2.9% in the first quarter to 1.8% in the second quarter, and moderated further to 0.2% in July. Domestic inflation is expected to recede further in the near term due to weak local economic conditions, the earlier decline in fresh-letting residential rentals and mild imported inflation amid the sluggish global demand. The Government has adjusted downward its projections of underlying and headline inflation rates for 2020 to 1.8% and 0.8% respectively. The latest market consensus forecasts the headline inflation rate for 2020 to be 0.9%.

Monetary conditions and capital flows

The Hong Kong dollar exchange rate has strengthened since March. Underpinned by equity-related Hong Kong dollar demand and carry trade activities as induced by the positive Hong Kong dollar-US dollar interest rate spreads, the Hong Kong dollar exchange rate strengthened to 7.7500 in April. The strong-side Convertibility Undertaking (CU) was triggered six times between 21 April and 27 April. Thereafter, the Hong Kong dollar exchange rate stayed strong at near the 7.75 levels and the strong-side CU was further triggered 44 times between 4 June and 22 September, underpinned by equity-related demand including initial public offering activities, the southbound Stock-Connect and dividend payments. Despite market volatilities arising from the COVID-19 outbreak, the Hong Kong dollar continued to trade in a smooth and orderly manner.

Hong Kong dollar interbank interest rates broadly declined along with their US dollar counterparts amid the increase in the Aggregate Balance from HK$54.3 billion at the end of February to HK$242.5 billion as at 24 September due to the triggering of the strong-side CU and the reduced issuance of Exchange Fund Bills. The composite interest rate decreased from 1.09% at the end of 2019 to 0.41% at the end of August, reflecting both the drop in retail banks' wholesale funding costs and the lowered time deposit interest rates offered by major retail banks. The average lending rate for new mortgages also decreased from 2.53% to 1.79% during the first seven months, mainly driven by the fall in the one-month Hong Kong interbank offered rate. Although the Federal Reserve lowered the target range for the US federal funds rate in March, the Best Lending Rates of major retail banks remained unchanged in the range

from 5.00% to 5.50% throughout the review period.

There was an increase of funds flowing to the Hong Kong dollar during the review period, as evidenced by the repeated triggering of the strong-side CU. Moreover, with total deposits growing in the first seven months of 2020, there were no significant cross-border outflows from the Hong Kong banking system. While continuing developments in the COVID-19 outbreak, US-China tensions and evolving geopolitical conflicts may heighten fund flow volatility, Hong Kong is able to withstand this volatility given its ample foreign reserves and robust banking system.

The offshore (CNH) and the onshore (CNY) renminbi depreciated from March and at one stage tested the decade low of 7.19 against the US dollar in late May amid the COVID-19 outbreak and the US dollar funding stress. Thereafter, both the CNY and CNH strengthened along with the broad weakness in the US dollar and positive sentiment on Mainland economic recovery. Overall, the spread between CNY and CNH remained moderate by historical standards, with the CNY-CNH spread turning from a discount to a slight premium as the renminbi depreciation pressure abated. The CNH liquidity pool in Hong Kong continued to expand during the review period. The total outstanding amounts of renminbi customer deposits and certificates of deposit picked up to RMB699.2 billion at the end of July. As for other renminbi businesses, both Hong Kong's renminbi bank loans and renminbi trade settlement expanded further, and the average daily turnover of the renminbi real time gross settlement system continued to stay high at RMB1,201.1 billion during the first seven months of 2020. Hong Kong's offshore renminbi business is expected to gain further momentum, supported by the ongoing liberalisation of Mainland's capital account, the rising demand for renminbi assets from international investors, and more regional economic and financial co-operation under the Belt and Road and Guangdong-Hong Kong-Macao Greater Bay Area initiatives.

Asset market

The local stock market has been on a roller coaster ride over the past six months. In tandem with global stock markets, the Hong Kong equity market was initially driven down by the COVID-19 outbreak. Lockdowns of economic activities sparked fear of an unprecedented global recession, at one stage in late March sending the Hang Seng Index (HSI) to its lowest level in more than three years. It has since recovered along with other equity markets amid proactive measures by leading central banks and unprecedented fiscal stimuli by governments globally, despite that the pandemic has yet to be brought under control. Since late-March, most global equities have recouped their losses, with the MSCI World Index reaching a record high by the end of the review period. Nevertheless, the HSI, while witnessing rebound from its year-low in March, was down by 4.2% during the review period.

The local debt market expanded mildly in the first half of 2020 on the back of steady growth in issuance compared to the second half of 2019. Amid massive monetary easing by leading central banks in response to the COVID-19 pandemic, yields of both sovereign and non-sovereign Hong Kong dollar bonds fell sharply to record lows in March, in tandem with the decline in US Treasury yields. As global equity markets rebounded in the second quarter, bond yields stabilised amid optimism that the policy responses of global governments to the pandemic might support an economic recovery.

Looking ahead, however, considerable uncertainties remain in both local equity and debt markets. Uncertainties over the path of global and domestic economic activities amid the pandemic, as well as the rising tensions between the US and Mainland China and its potential

implications for Hong Kong, could undermine operational activities, earnings, and the credit quality of corporates. This could dampen the sentiment in both the stock and debt markets for the rest of 2020.

After a quiet first quarter, the housing market picked up in the second quarter, partly supported by the low interest rate environment and a temporary stabilisation of the local COVID-19 situation. Housing transactions increased considerably towards mid-year and the secondary-market housing prices picked up by around 2.2% in March – June after falling by 4.7% from the peak in May 2019. As local infection cases rose again in July, housing market activities softened in July and August.

The outlook for the residential property market is subject to a number of uncertainties and risks as discussed above. The lingering COVID-19 outbreak, coupled with the deepened economic recession and the rising unemployment rate, will weigh on housing demand. Other external risk and uncertainty factors such as the intensified US-China tensions may also affect the residential property market sentiment. However, the prolonged ultra-low interest rates will continue to be a supporting factor for asset prices. Over the longer term, the outlook for the housing market will depend on the housing supply-demand gap. According to the latest completion figures, the private housing supply has not been disrupted by the pandemic. More than 11,000 units were completed by end-July, which met more than a half of the Government's projection for 2020.

The non-residential property markets saw a further moderation in the first half of the year. With the pandemic and escalating geopolitical tensions continuing to weigh on business confidence, the non-residential property markets are likely to remain under pressure. Taking into account factors such as the price trends of non-residential properties, transaction volumes, economic fundamentals, and the external environment, the HKMA considers it appropriate to adjust the countercyclical macroprudential measures on non-residential properties. Effective from 20 August 2020, the applicable loan-to-value ratio caps for mortgage loans on non-residential properties are adjusted upward by 10 percentage points.[2]

Banking sector performance

Due to the deterioration in the global economic environment amid the COVID-19 pandemic, the banking sector recorded thinner profits in the first half of 2020. The pre-tax operating profits declined by 20.0% in the first half of 2020 compared with the same period in 2019. The reduction in profits was mainly driven by a decrease in net interest income and an increase in loan impairment charges, which more than offset the mild increase in non-interest income. As a result, the return on assets dropped to 0.95% in the first half of 2020 compared with 1.27% in the same period of 2019.

Despite a slight deterioration in the asset quality of the banking sector amid the deepening economic recession, it remained sound by historical and international standards. In view of the huge uncertainty over the development of the COVID-19 pandemic, asset quality may see a further deterioration ahead if the threats of further outbreaks continue to stress borrowers' repayment ability.

Capital and liquidity positions of the banking sector remained robust, providing strong buffers for banks to withstand any deterioration in asset quality. The consolidated total capital ratio of locally incorporated authorized institutions (AIs) stood at a high level of 20.7% at the end of June 2020. Regarding the liquidity positions, the average Liquidity Coverage Ratio of category 1 institutions and the average Liquidity

[2] For more details, see the circular "Prudential Measures for Mortgage Loans on Non-residential Properties" issued by the HKMA on 19 August 2020.

Maintenance Ratio of category 2 institutions stayed at high levels of 156.5% and 57.2% respectively in the second quarter of 2020. In addition, the average Net Stable Funding Ratio of category 1 institutions and the average Core Funding Ratio of category 2A institutions both stayed at levels well exceeding their statutory minimum requirements.

Despite the worsening global environment in the first half of 2020, total loan growth increased slightly. On a half-yearly basis, growth in total loans and advances of all AIs edged up to 3.0% in the first half, after increasing by 2.4% in the second half of 2019. Loan growth was broad-based, with growth in loans for use outside Hong Kong accelerating to 4.2% in the same period from 2.2% in the preceding six months, and growth in domestic loans (comprising loans for use in Hong Kong and trade financing) being broadly stable at 2.6%. Foreign currency loans grew sharply during the same period, partly driven by strong demand from corporates for US dollar loans amid a sharp global dollar liquidity stress around mid-March.

Liquidity conditions of the Hong Kong dollar and banking sector remained sound in the first half. With total loan growth marginally outpacing deposit growth during the review period, the average all-currency loan-to-deposit (LTD) ratios of all AIs edged up to 76.0% at the end of June 2020 from 75.3% six months ago. The average Hong Kong dollar LTD ratio of all AIs declined, driven by an increase in Hong Kong dollar deposits and a mild decline in loans.

The outbreak of COVID-19 and related containment measures have exerted significant cash-flow pressures on corporates, as their revenue declined sharply. Worsening funding positions among corporates could adversely affect firms' debt servicing ability, putting their solvency under the test. Based on accounting data of local non-financial corporates listed in Hong Kong, Box 4 analyses corporates' funding and default risks under a recession scenario with a sharp drop in corporate revenue. The analysis shows that while corporates in Hong Kong may see higher default risks due to declines in revenue and thus net cash buffers amid the COVID-19 pandemic, the severity of the impact would vary across sectors. The analysis also finds that how far firms can roll over their short-term debt under the revenue shock is a key determinant of the funding and default risks, suggesting that maintaining stable credit flows to support the real economy is critically important in such a difficult situation. Therefore, the relief measures taken by the HKMA and the banking sector should help corporates, particularly small and medium-sized enterprises, to ride through this difficult period.

The uncertainties over the path of global and domestic economic recovery amid the COVID-19 pandemic and rising US-China tensions will continue to pose significant challenges to the Hong Kong banking sector. As these risk factors may continue to linger, banks should carefully assess the longer term impact on the asset quality of their loan portfolios, particularly as the recession may weaken corporates' and households' repayment ability.

The Half-yearly Report on Monetary and Financial Stability is prepared by the staff of the Research Department of the Hong Kong Monetary Authority.

2. Global setting and outlook

The global economy plunged into recession in the first half of 2020, as lockdown measures to contain the COVID-19 pandemic brought real activities to a standstill. While unprecedented fiscal and monetary policy accommodation drove a rebound in financial markets, the resulting disconnect from the underlying economic prospects, coupled with rising global geopolitical tensions, may point to risks of heightened financial market volatility ahead. Without medical breakthroughs, the global economic outlook will hinge on striking a delicate balance between reopening the economy and avoiding a resurgence of the pandemic. Further down the road, policy responses to the pandemic may risk exacerbating the global debt build-up and entrenching "low-for-long" monetary policy.

In East Asia, despite the early signs of recovery since mid-2020, the region will continue to grapple with the lingering impacts of the pandemic. A prolonged outbreak will raise concerns about the sustainability and capacity of policy supports. With rising corporate debt issuances, weakening business earnings will also challenge corporates' debt repayment capability.

In Mainland China, the economy bounced back to growth in the second quarter after a deep slump in the first quarter amid the COVID-19 outbreak. Looking ahead, whether the recovery will continue greatly hinges on future developments of the pandemic as well as the tensions between Mainland China and the US. In view of the economic headwinds, the government scrapped an annual growth target for this year while putting more emphasis on stabilising the economy and employment.

2.1 External environment

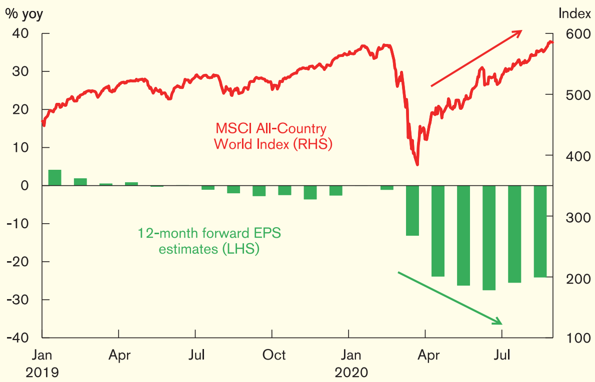
The increasingly widespread implementation of lockdown measures to contain the COVID-19 pandemic resulted in precipitous year-on-year contractions in real gross domestic product (GDP) across major economies (except Mainland China) in the second quarter.[3] To prevent the economic standstill from spiralling into systemic crises, unprecedented policy accommodation was deployed, including fiscal transfers and loan guarantees by governments to support affected households and businesses, and aggressive balance sheet expansions by major central banks in the form of lending facilities and asset purchases.

Amid the concerted global policy easing and liquidity backstops, earlier signs of distress in short-term funding and high-yield credit markets that emerged in late-March rapidly subsided. This, together with increased investor optimism of a "V-shaped" rebound in economic activity,

[3] In addition to the impact of virus containment measures, many emerging market economies (EMEs) were further hit by plummeting exports and commodity prices as global demand evaporated.

underpinned a rally in global equity markets. However, in view of the deteriorated corporate earnings outlook (Chart 2.1), such a rebound in financial markets appeared disconnected from the underlying economic prospects and may prove fragile.

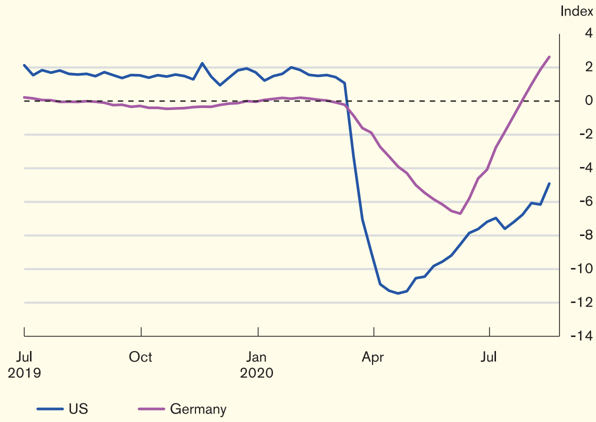
Chart 2.1
MSCI All-Country (AC) World Index and consensus estimates on 12-month forward earnings per share (EPS)



Sources: Bloomberg and HKMA staff calculations.

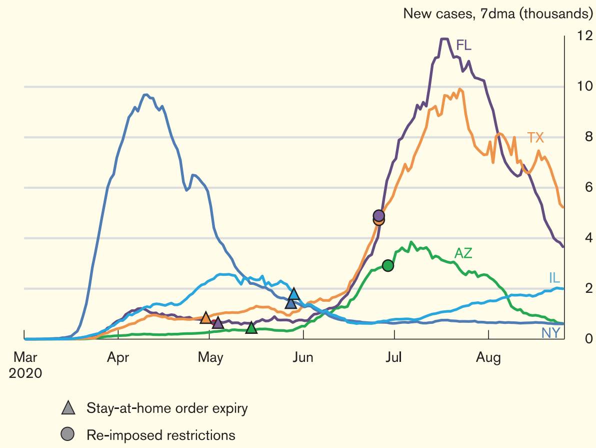
Lingering uncertainties over the pandemic could risk triggering heightened financial market volatility ahead. While high-frequency indicators showed tentative signs of recovering economic activities in major economies towards the end of the second quarter, as containment measures were relaxed (Chart 2.2), any resurgence in the COVID-19 outbreak could force renewed lockdowns. Indeed, such risks have already materialised in the US, where resurging COVID-19 cases led several states to re-impose restrictions (Chart 2.3). Concerns over new waves of the outbreak, in turn, have triggered several rounds of sell-offs in the US equity markets since mid-June.

Chart 2.2
Weekly economic activity indicators in selected advanced economies (AEs)



Note: The Weekly Activity Index (for Germany) measures changes in trend-adjusted economy activity over the preceding 13 weeks, while the Weekly Economic Index (for the US) is scaled to align with the year-on-year real GDP growth rate in that quarter.
Sources: Bundesbank and New York Fed.

Chart 2.3
COVID-19 cases in selected US states and dates of restrictions easing and re-imposition



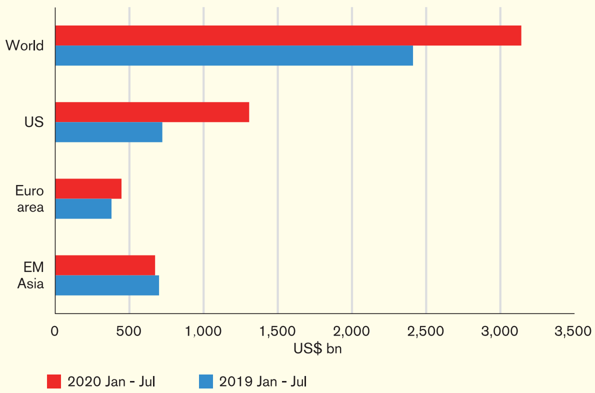
Notes: AZ = Arizona, FL = Florida, IL = Illinois, NY = New York, TX = Texas.
Sources: The COVID Tracking Project and the New York Times.

The near-term financial market outlook is also clouded by rising geopolitical uncertainties. US-China relationships turned increasingly acrimonious following the outbreak of the pandemic, while the US and European Union (EU) faced increasing trans-Atlantic trade tensions amid disputes over a new global taxation framework for technology companies, as well as prior World Trade Organisation (WTO) rulings that allowed the US to impose retaliatory tariffs on European products. In the UK, Brexit

negotiations remained unsettled on a number of sticking points including fishing rights and the interpretation over "level playing field" provisions, raising the risk of EU-UK trade relationships falling back to WTO standards (i.e. "no-deal Brexit"). Such uncertainties may threaten to undermine investor optimism, should future developments take a turn for the worse.

Beyond the near-term risks of increased financial market gyrations, the unprecedented global fiscal and monetary easing may also have longer-term side effects through undermining debt sustainability and financial stability. Global corporate bond issuance surged (Chart 2.4), as companies took advantage of major central banks' backstops to secure liquidity, while public indebtedness is also expected to rise significantly as governments increase spending to support the economy. With global economic growth expected to remain soft in the years ahead, it may be difficult for corporates and sovereigns to "grow their ways out of debt", raising concerns about their debt-servicing ability.

Chart 2.4
Corporate bond issuance (in US$ billion)

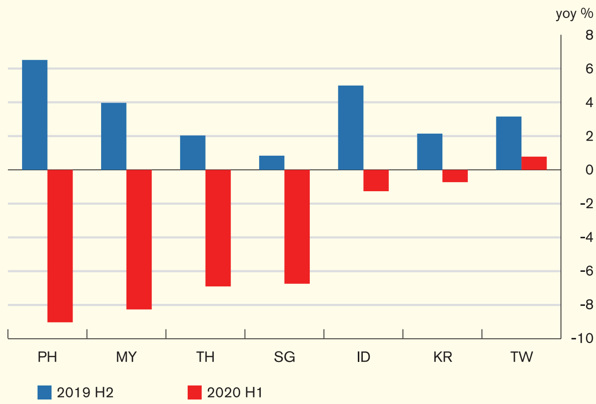


Note: EM Asia includes Mainland China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea and Thailand. All types of corporate issuers, including financial firms, are included.
Source: Dealogic.

The sharp global debt build-up, in turn, might constrain the leeway for major central banks to normalise monetary policy, for fear of upsetting governments' fiscal sustainability and the private sector's debt repayment capacity. With policy interest rates expected to remain close to or slightly below zero in the coming years across major AEs, banks' profitability will likely remain under pressure, possibly motivating them to engage in yield-searching activities to the detriment of financial stability. Meanwhile, the rapid expansion of central banks' balance sheets could risk undermining their credibility in maintaining price stability in the longer term.

In East Asia, real GDP growth plummeted in the first half of 2020 (Chart 2.5), with manufacturing activities, exports and consumption plunging amid the broad-based containment measures. While there were signs of bottoming out since June, according to the PMI and mobility trends data, a meaningful rebound has yet to be seen, especially in those economies where the pandemic has still to be contained.

Chart 2.5
East Asia: Real GDP growth



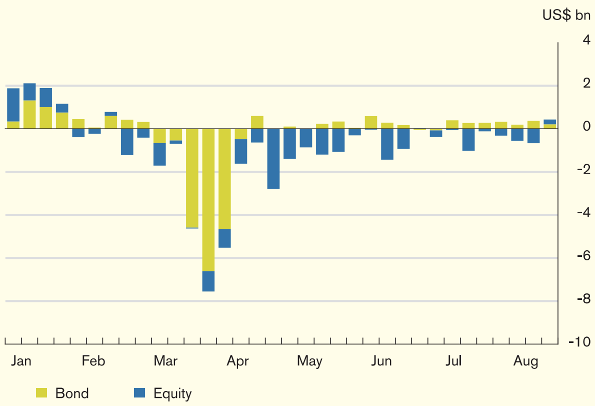
Sources: CEIC and HKMA staff calculations.

Regional financial markets have stabilised from the turmoil in March. Historically, the region experienced its largest portfolio outflows in March and early April, with abrupt outflows from both institutional and retail bond funds underscoring the surge in risk aversion (Chart 2.6)[4]. The heightened redemption pressure has fuelled fire sales by fund managers with a low cash-holding level, causing sharp

[4] The EPFR portfolio fund flows data started from mid-2000s.

equity exchange traded funds (ETFs) outflows from the region. Box 1 discusses how such cash-redemption pressure affects equity fund flows of ETFs in the region and other EMEs. The outflow pressure eased after sentiment improved with global central banks' aggressive accommodation. Meanwhile, after widening in March, cross currency basis swap spreads of most East Asian currencies – a gauge of offshore US dollar liquidity – also narrowed in April after some central banks in the region (Singapore and South Korea) established swap lines with the US Federal Reserve (Fed). Most regional currencies have also regained some ground since April.

Chart 2.6
East Asia: Portfolio fund flows

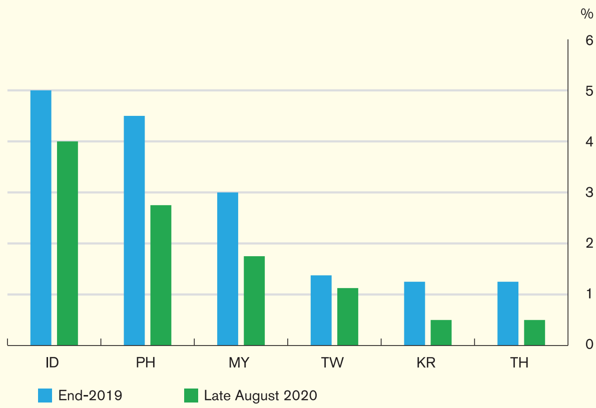


Sources: EPFR and HKMA staff calculations.

In the near term, the region will continue to face the lingering impacts of the pandemic. First, the pandemic poses an unprecedented policy dilemma for regional economies. On one hand, keeping or strengthening the containment restrictions could reduce the rate of infection, but the mounting economic loss could be increasingly unbearable for governments and societies. On the other hand, early relaxation of restrictive policies could boost economic activities, especially for those severely affected sectors like restaurants, hotels and airlines, but will entail the risks of renewed outbreak.

Secondly, a prolonged outbreak will raise concerns on the sustainability and capacity of policy support. On the fiscal front, given the pandemic is still evolving, the size of a stimulus package may need to be increased in order to adequately address the consequences of the pandemic. Nevertheless, markets usually apply more stringent fiscal standards for emerging markets than major AEs for several reasons, including the latter's reserve currency status. On the monetary front, after cutting their policy interest rates multiple times to support the economy (Chart 2.7), the room for further monetary easing is limited given policy interest rates are already at very low levels for many economies, and the potential depreciation pressures for those with weaker external positions.

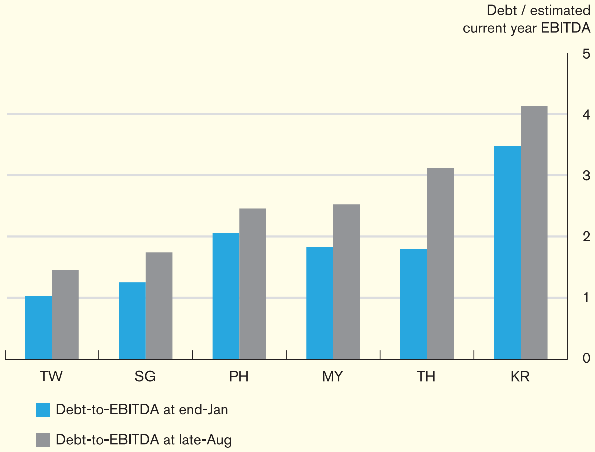
Chart 2.7
East Asia: Policy interest rate



Source: CEIC.

Thirdly, rising corporate debt along with the highly uncertain business outlook could sow seeds of financial instability, thus undermining corporate debt repayment ability further down the road. Indeed, the debt-earnings ratio estimates of listed firms in the region has increased since the pandemic outbreak, indicating an increasing challenge to firms' repayment capability (Chart 2.8).

Chart 2.8
East Asia: Debt relative to expected EBITDA of listed firms



Note: Constituents of benchmark index covered. Relevant data series for Indonesia has not been updated since early 2019 and is thus not included.

Source: Bloomberg.

Box 1
Does cash redemption amplify the outflows from Exchange traded funds?

Introduction

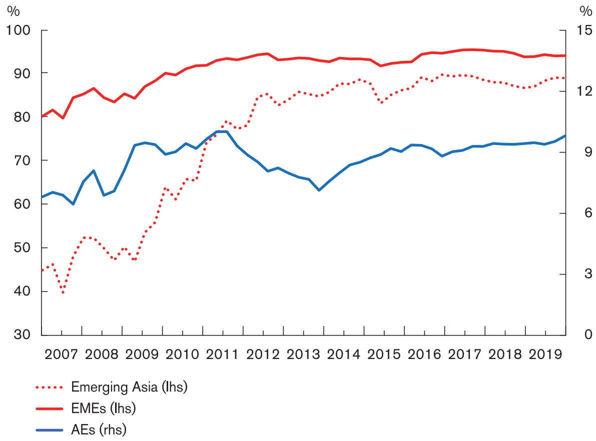
ETFs have been growing rapidly, reflecting their merit in such areas as index-tracking at low cost, intra-day trading, and flexibility to buy on margin or to sell short. Partly as a result of these qualities, equity ETFs saw their assets under management surging to US$4.8 trillion at the end of 2019, a six-fold increase from the end of 2009. However, the growing reliance on ETFs has raised concerns about their resilience to a deterioration in a fund's performance.

In this Box, we show that for those ETFs that are cash-redeemable, but holding a low level of cash, an initial redemption shock to these ETFs could lead to a downward spiral in fund performance and outflows. Such potential downward spirals have systemic implications given the growing role of ETFs in the global financial market and, more importantly, a fire sale of underlying securities triggered by redemptions could, more broadly, also amplify a financial market downturn.

For EMEs, the above concern is particularly noteworthy since cash-redeemable ETFs are far more common than in AEs. At the end of 2019, the majority of the ETFs investing in EMEs were cash-redeemable (94.2%), compared to only one-tenth of the ETFs investing in AEs (Chart B1.1). In particular, for emerging Asia, cash-redeemable ETFs accounted for 89.0% of all ETFs primarily investing in the region, or one-quarter of all cash-redeemable ETFs destined for EMEs.

Against this backdrop, this Box first discusses the redemption mechanisms of ETFs in order to explain why cash-redeemable ETFs may pose higher financial stability risks than other ETFs. We will then present our empirical findings, which show that cash-redeemable ETFs with a low level of cash holdings could face stronger pressure on outflows than other types of ETFs when the ETFs' performance is weak. We also associate such stronger pressure with a fire sale of the ETFs' underlying assets by their fund managers who "dash for cash" to meet redemption orders.

Chart B1.1
Share of cash-redeemable ETFs across regions



Sources: Morningstar Direct, Bloomberg and HKMA staff calculations.

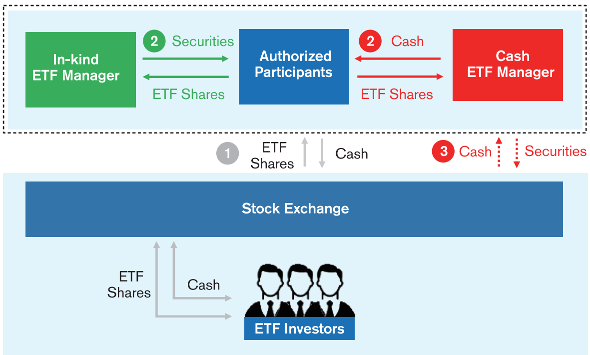
Redemption mechanisms of ETFs

The redemption of ETF shares is confined to the primary market, which only involves direct dealing between the ETFs and their authorized participants (APs), who are usually broker-dealers or market makers in the underlying securities (Chart B1.2). When an ETF price is below the value of the underlying securities, APs can take arbitrage by buying ETF shares (Step 1) from the secondary market and then redeeming the shares from the ETF manager (Step 2).[5] The redemption can be either in cash (namely, cash redemption), or in kind – that is, to exchange ETF shares for a basket of equivalent underlying securities (namely, in-kind redemption).

[5] If the ETF price is higher than the value of the underlying securities, APs can take arbitrage the other way round, i.e. buying underlying securities and delivering them to the ETF fund managers (for in-kind ETFs), or paying the equivalent amount of cash to the manager (for cash ETFs), in exchange for ETF shares. The acquired ETF shares can then be sold for a profit.

The cash redemption method might offer flexibility or a cost advantage to ETF managers on one hand, as they do not need to own all the index securities on a pro rata basis, which matters for ETFs investing in illiquid markets where the trading costs of all index securities can be prohibitively high. On the other hand, this method can increase the vulnerability of the ETFs. Specifically, when an ETF that adopts this method has to meet massive redemptions in cash (Step 2 in red), but its cash holdings are not sufficient, the ETF manager may be compelled to sell its assets in the secondary market at unfavourable terms (Step 3). Such a "fire sale" will worsen the subsequent return of the ETF, possibly widening its tracking error (i.e. ETF return minus its benchmark index return) and further weakening the demand for the ETF shares, causing another round of redemptions, and so on. Therefore, the cash redemption method can potentially cause the fund flows of ETFs more sensitive to their fund performance when the ETF has a low cash level.

Chart B1.2
Cash and in-kind redemption mechanisms of ETFs



Methodology and Data

In order to assess the vulnerability of cash-redeemable and in-kind ETFs, we examine (1) the sensitivity of their fund flows[6] to the fund's poor performance and (2) the sensitivity of tracking errors to redemption orders. For both sensitivities, we distinguish ETFs with a normal level of cash holdings from those with a low level of cash holdings.[7] A fixed-effect panel-data regression model is used to evaluate these sensitivities. In this model, we control for several fund-specific variables, such as fund size, fund age, and lagged fund flow, and control for global market conditions using the Chicago Board Options Exchange Volatility Index. All the fund specific variables are lagged by one quarter to avoid reverse causality bias.

Our empirical studies make use of quarterly ETF data retrieved from the Morningstar Direct for the period the first quarter of 2007 to the fourth quarter of 2019. Our sample consists of 2,293 equity ETFs domiciled all over the world, among which 910 ETFs are redeemed in kind only ("in-kind ETFs") and the remaining ETFs are cash-redeemable. Of these cash-redeemable ETFs, 551 are redeemed in cash only ("cash ETFs"), while 832 ETFs can be redeemed either in cash or in kind ("hybrid ETFs"). In terms of asset size, the sampled ETFs totalled US$4.37 trillion at the end of 2019, accounting for 91.24% of the total asset value of the equity ETF universe in the Morningstar Direct.[8]

Empirical findings

First, we assess the sensitivity of ETF fund flows to their fund performance. For ETFs with a normal level of cash holdings, we find that redemption types make little difference. Specifically, a 1% decline in the ETF's investment return is associated with an outflow of around 0.3% at a 10% level of significance, regardless of the redemption type (Chart B1.3).

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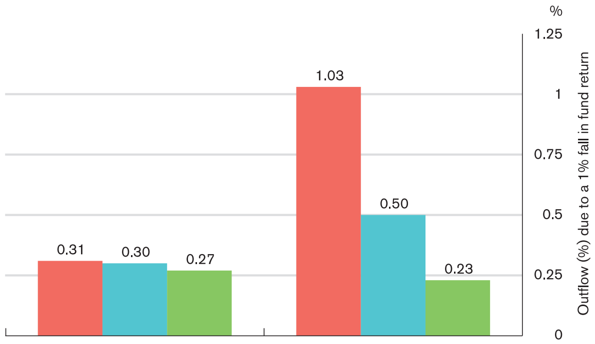
6 Fund flow is defined as the percentage change in the value of ETF's total net assets, net of ETF price change.

7 In this study, an ETF is regarded as holding a low level of cash if its cash holdings as a percentage of its total assets is below the bottom quartile of all the ETFs with the same redemption arrangement for each quarter.

8 Following the literature, we exclude certain ETFs from our sample, such as ETFs with a history of less than one year or net asset value less than US$50 million, and ETFs with an unknown redemption mechanism.

However, for ETFs with a low level of cash holdings, the same 1% decline in the ETF's investment return would lead to a significant outflow from cash ETFs by 1.03%, which is larger than that for cash ETFs with a normal level of cash holdings (by around 0.72 percentage points). For other types of ETFs with a low level of cash holdings, the estimates of outflows are found to be much lower, albeit significantly, at around 0.5% for hybrid ETFs and 0.23% for in-kind ETFs.

Chart B1.3
Sensitivity of outflows to poor performance

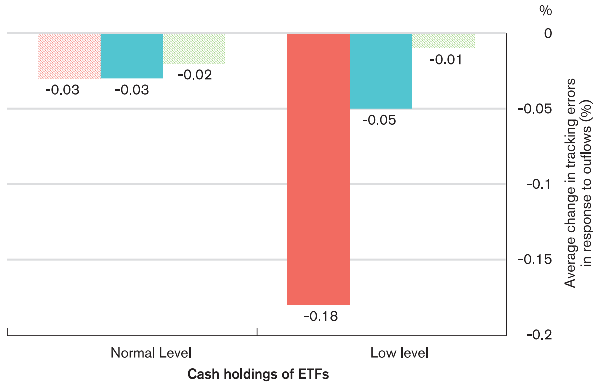


Note: All estimates are statistically significant at the 10% level.
Source: HKMA staff calculations.

Second, we assess the sensitivity of tracking errors to outflows. When an ETF has a normal cash level, the estimated tracking errors are immaterially small across redemption types, in response to outflows of funds. However, under the condition of low cash holdings, a cash ETF is found to underperform its index significantly by 0.18% in a quarterly return on average, and a hybrid ETF by 0.05%, compared with an insignificant level of 0.01% for the in-kind ETFs (Chart B1.4).

In sum, these results show that, when an ETF has low cash holdings, outflows of a cash-redeemable ETF, especially the cash ETF, would be more sensitive to its poor performance and would materially widen the tracking errors of the ETF, compared to the in-kind one. The widened tracking error of these ETFs may be due to managers' fire sale of the underlying assets of their funds to meet cash redemptions given their low cash level.

Chart B1.4
Sensitivity of tracking errors to outflows



Note: All estimates with a solid bar are statistically significant at the 10% level.
Source: HKMA staff calculation.

Conclusion

While cash redemption mechanism might offer flexibility to ETFs investing in illiquid markets, our results imply that outflows from cash-redeemable ETFs are more prone to deterioration in financial market performance in stressful periods. Such a higher sensitivity is likely attributable to the fund managers' fire sale, which may potentially trigger subsequent rounds of redemptions, leading to a downward spiral in fund performance and outflows.

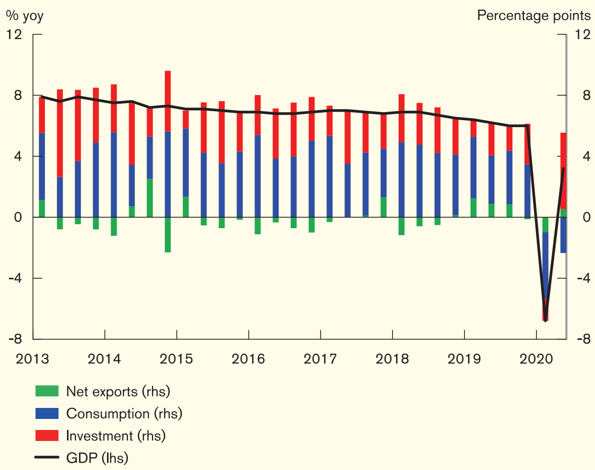
In addition, our results may underscore the potential financial vulnerability of EMEs that is led by cash-redeemable ETFs, as about 90% of all ETFs investing in EMEs, particularly emerging Asia, are cash-redeemable. Although these cash-redeemable ETFs account for only a minor share (about one-tenth) of all ETFs globally in asset size, their rapid growth warrants policymakers' attention. In particular, policymakers should give careful policy scrutiny when balancing the pros and cons of cash-redeemable ETFs for overall financial stability.

2.2 Mainland China

Real sector

After a deep slump of 6.8% year on year in the first quarter amid the COVID-19 outbreak, the Mainland economy bounced back and expanded by 3.2% year on year in the second quarter, following a gradual resumption of work and production (Chart 2.9). Altogether, real GDP contracted 1.6% year on year in the first half of 2020.

Chart 2.9
Mainland China: Contribution to GDP growth by demand component



Sources: CEIC, NBS and HKMA staff estimates.

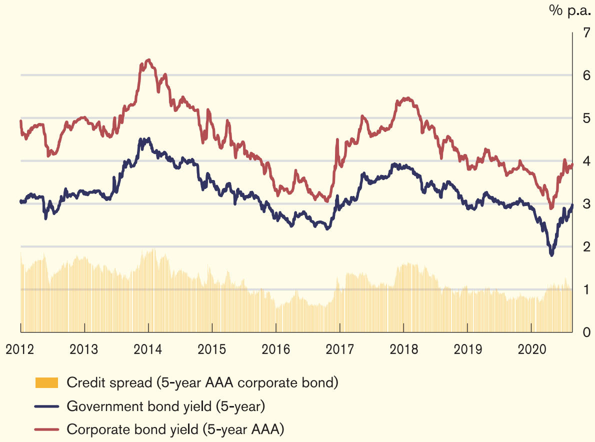
The economic recovery in the second quarter was primarily led by a strong pickup in investment amid accelerated infrastructure and real estate spending. Manufacturing investment also improved in the second quarter, though not yet reverting to the pre-pandemic level. In comparison, while overall consumption rebounded, a breakdown of retail sales suggests that business activities in some segments that rely heavily on in-person interaction, such as entertainment and catering, remained lacklustre in the second quarter. As a result, consumption contributed negatively to GDP growth in the second quarter, albeit at a smaller magnitude compared with the first quarter. Externally, the contribution of net exports to overall growth turned positive in the second quarter, as imports remained sluggish but exports surprised on the upside, in part due to a surge in shipments of medical supplies. Our own daily economic activity index showed that the Mainland economy continued to recover in the third quarter, but volatility increased recently (see more details in Box 2).

In view of the considerable uncertainties surrounding the development of the pandemic and global economic recovery, the government scrapped an annual growth target at this year's National People's Congress. Instead, it put more emphasis on stabilising the economy and employment by supporting the private sector, especially small and medium-sized enterprises (SMEs). To this end, the government vowed to introduce more proactive fiscal policies and additional targeted easing, while keeping potential systemic risks in check. Whether the recovery will continue greatly hinges on future developments of the pandemic as well as the tensions between Mainland China and the US. The latest consensus forecasts expect the Mainland economy to expand by 2.1% in 2020.

Asset and credit Markets

In the bond market, government bond yields rebounded in May on accelerated government bond issuance. As a result, funding costs of corporate issuers also increased and hovered around high levels in the following months (Chart 2.10). Despite rising funding costs, credit spreads of corporate bonds remained largely stable since May, in part reflecting improved market sentiment amid economic normalisation.

Chart 2.10
Mainland China: Five-year corporate and government bond yields



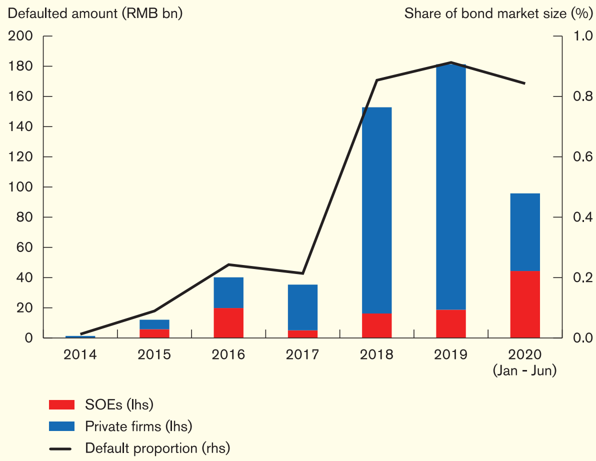
Sources: Wind and HKMA staff estimates.

In the first half of 2020, non-financial corporate bond issuance in the onshore market reached RMB6.33 trillion, almost 50% more than the same period last year. In comparison, Mainland corporates only raised RMB1.83 trillion (US$259 billion) in the offshore market, about 15% less than in the same period one year ago, partly due to lockdowns of international borders as well as increased volatility in overseas financial markets.

The impact of the COVID-19 outbreak on the repayment ability of corporate issuers appeared to be limited so far. The number of bond defaults in the onshore market picked up in February as the COVID-19 outbreak loomed, and then reduced after work resumed. Taking the first half of 2020 as a whole, the share of defaulted bonds remained low in the onshore market, partly due to a variety of supportive measures introduced by authorities aimed at lowering the financial burden of firms affected by the pandemic.

More specifically, although the amount of defaulted bonds in the onshore market increased to RMB95.8 billion in the first half of 2020, 21.6% up from the same period in 2019, the share of defaulted bonds in total outstanding non-financial debt securities declined to 0.84% from 0.91% in 2019 (Chart 2.11).[9] Similar to the onshore market, the annualised default rate in the offshore market remained at a low level of 0.54% in the first half of 2020, albeit higher than 0.21% in 2019 and 0.43% in 2018.

Chart 2.11
Mainland China: Onshore bond default size and proportion



Note: Annualised default proportion is reported for Jan–Jun 2020, including defaults of enterprise and corporate bonds, medium-term notes, short-term commercial papers and private placement notes.

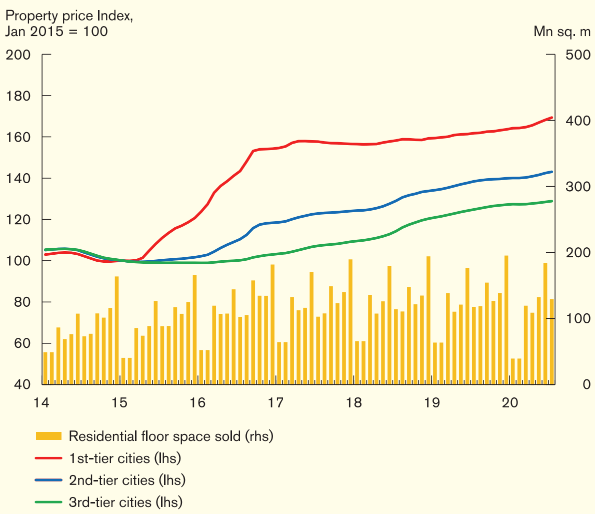
Sources: Wind and HKMA staff estimates.

Further analyses suggest that the onshore and offshore defaults in the first half of 2020 were mainly concentrated in lower-rated issuers, especially information technology (IT), diversified holding and construction firms. During the period, the share of state-owned enterprise (SOE) defaults increased, mainly driven by the multiple defaults by a state-owned IT manufacturer.

9 The first half of 2020 witnessed bond defaults by 36 corporate issuers, compared with 47 in the first half and 55 in the second half of 2019.

In the property market, housing prices continued to inch up in the first half of 2020, especially in first-tier cities despite the pandemic. On the transaction side, floor space sold declined year on year in the first quarter, but quickly picked up and returned to the pre-pandemic level in the second quarter (Chart 2.12). As a result of declined sales in the first quarter, the inventory-to-sales ratio rose to 14.1 months in June 2020 from 12.5 months in December 2019, but still remained at a much lower level than the peak of 31 months in early 2015.

Chart 2.12
Mainland China: Residential prices by tier of cities and floor space sold

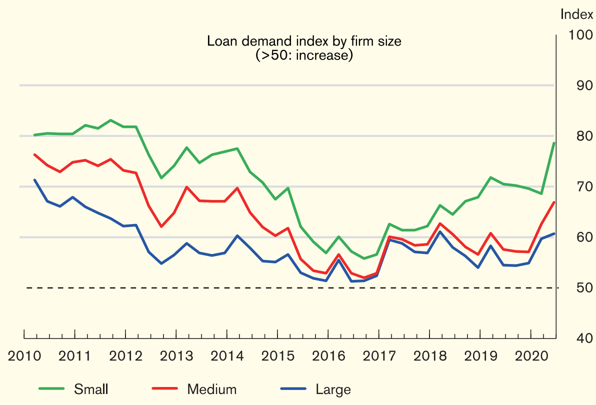


Sources: CEIC and HKMA staff estimates.

To contain potential risks in the real estate sector, the government reiterated in the 2020 government work report that "houses are for living in, not for speculation". In the near term, measures to temper speculative activities and encourage adequate land supply are likely to remain in place to promote steady and healthy development of the property market.

In the loan market, loan demand rebounded notably in the first half of 2020, according to the quarterly survey by the People's Bank of China (PBoC). Loan demand from small and medium-sized firms, in particular, showed a much stronger rebound than that from large firms in the second quarter (Chart 2.13).

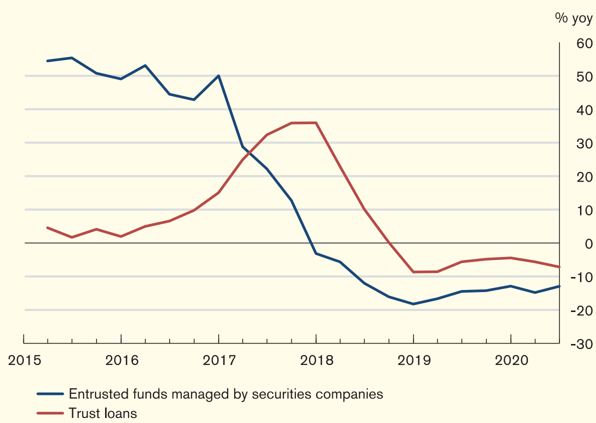
Chart 2.13
Mainland China: Loan demand index by firm size



Source: PBoC.

The strong rebound in loan demand may have partly reflected increased financing needs of Mainland firms amid the resumption of work after the COVID-19 outbreak. In addition, continued contraction in informal lending amid government efforts to contain financial risks may also have pushed up firms' demand for formal financing, such as bank loans. Indeed, shadow banking activities such as trust lending and entrusted funds managed by securities companies contracted further in the first half of 2020 (Chart 2.14), in tandem with the decline in banks' involvement in shadow banking activities.

Chart 2.14
Mainland China: Growth of trust loans and entrusted funds managed by securities companies

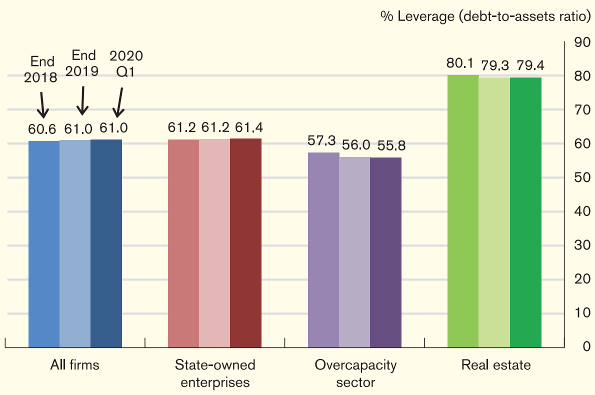


Sources: CEIC, Securities Association of China and HKMA staff estimates.

To meet firms' financing needs, the PBoC conducted several rounds of required reserve ratio (RRR) and interest rate cuts in the first half of 2020 alongside other easing measures to encourage bank lending, especially to smaller firms (see the fiscal and monetary policy section for details). As a result, the expansion of the overall bank loans extended to the corporate sector remained largely stable at around 13%, while the outstanding size of bank loans extended to the "smallest" firms with credit limit less than RMB10 million accelerated further from 25% year on year at the end of 2019 to 27% by the end of June 2020. In tandem, the average borrowing cost of the "smallest" firms further eased to 5.94% at the end of June 2020 from 6.70% at the end of 2019.

While there is no further public information on the distribution of bank credit among firms with different sizes, other than the "smallest" ones, analyses of listed firm data show that the leverage of less efficient borrowers, such as firms in overcapacity sectors, declined marginally in the first quarter of 2020, while the leverage of the real estate sector remained largely steady (Chart 2.15).

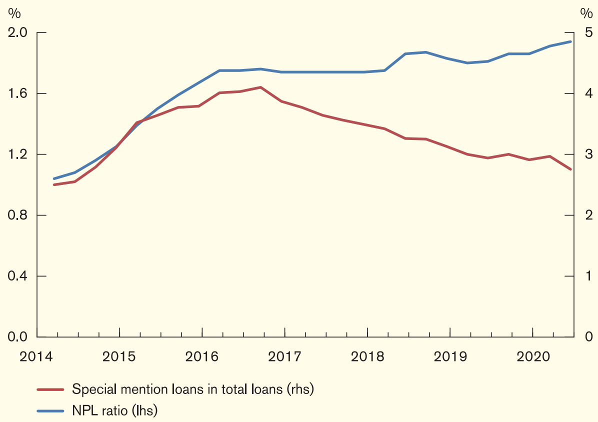
Chart 2.15
Mainland China: Corporate leverage of SOEs, firms in overcapacity sectors and real estate companies



Sources: Bloomberg and HKMA staff estimates.

The overall bank asset quality remained robust during the review period. The overall non-performing loan (NPL) ratio stayed below 2%, though slightly edging up to 1.94% in the first half of 2020 from 1.86% at the end of 2019. The share of special mention loans in total bank loans decreased slightly to 2.8% during the same period[10] (Chart 2.16).

Chart 2.16
Mainland China: NPL ratio and special mention loan ratio

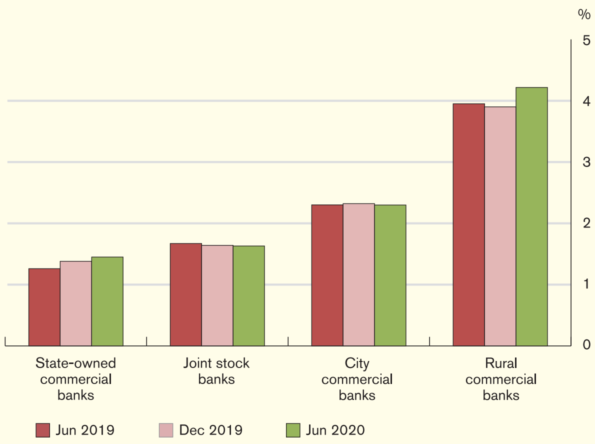


Source: CEIC.

The overall risk in the Mainland banking sector appears moderate. On one hand, the asset quality of smaller banks seems to have faced some pressures, in part reflecting the fact that the repayment ability of corporate borrowers, especially smaller ones, deteriorated amid increased economic headwinds. In particular, the NPL ratio of rural commercial banks rebounded to above 4% in the first half of this year (Chart 2.17). On the other hand, the NPL ratio of Mainland banks, especially the systemically important ones, remains largely stable at low levels. In addition, relatively high loan loss provisions can also help protect banks against future losses. As of June 2020, the provision coverage ratio of Mainland banks stood at 182%, well above the regulatory requirement.

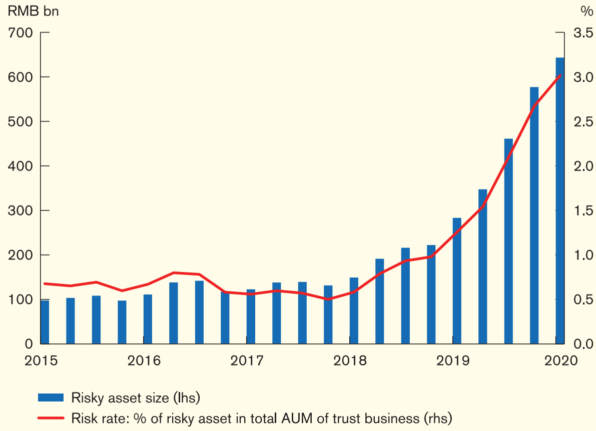
[10] A loan will be classified as special mention loans if the borrower has the ability to repay the loan currently, but may be affected by some unfavourable factors, according to the China Banking and Insurance Regulatory Commission. NPLs include loans that are classified as substandard, doubtful or loss, which are loans that are unlikely to be fully repaid and banks will thus suffer losses of different degrees.

Chart 2.17
Mainland China: NPL ratio by bank types



Source: CEIC.

Chart 2.18
Mainland China: Risky asset size and risk rate of trust companies



Sources: Wind and HKMA staff estimates.

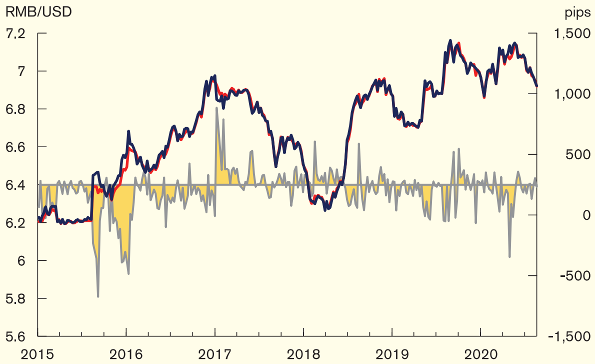
To contain potential systemic risks facing the banking system, the authorities have implemented multiple measures to support smaller banks during the review period. On the liquidity front, RRR cuts as well as re-lending and re-discounting schemes were introduced targeting smaller banks to help ease liquidity conditions. On the capital front, the authorities accelerated the approval for small bank perpetual bond issuance, and announced plans to purchase convertible bonds issued by smaller banks needing to replenish their capital.

While the banking sector remained largely sound, anecdotal evidence suggests the asset quality of non-bank financial institutions might have deteriorated amid recent economic fluctuations. For instance, latest statistics show that in the first quarter of 2020, the risk rate, measured as the percentage of risky assets in the total assets under management of the trust industry, rose to 3.02% from 2.67% at the end of 2019 (Chart 2.18). While the risk rate of trust companies does not appear to be high, whether the rising trend will continue warrants close monitoring.

Exchange rate and cross-border capital flows

After strengthening in January, the onshore renminbi (CNY) weakened in the following months amid the pandemic and renewed US-China tensions, but a strong rebound since June with the weakening of the US dollar brought the renminbi exchange rate back to about the same level at the beginning of 2020 (Chart 2.19). The offshore renminbi (CNH) was traded weaker than its onshore counterpart for most of the time, with the CNY-CNH spread once widening to more than 700 pips in May amid escalating US-China tensions. However, the spread narrowed alongside the renminbi appreciation towards the end of the review period. With the Mainland economy recovering, the Bloomberg consensus forecast for the renminbi exchange rate against the US dollar at the end of 2020 was revised higher to 7.00 on 26 August 2020 from 7.05 in June.

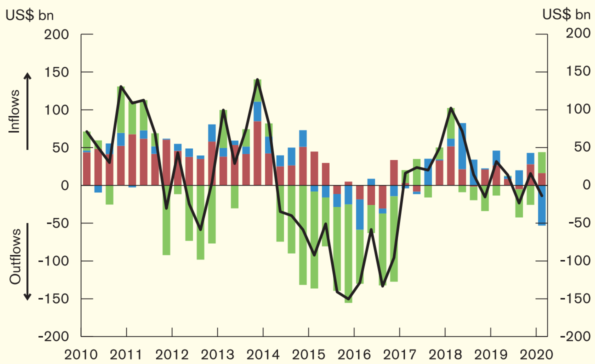
Chart 2.19
Mainland China: Onshore and offshore renminbi exchange rates against the US dollar



Sources: Bloomberg and HKMA staff estimates.

Despite the weakening of the renminbi in most of the first half, capital outflow pressure remains subdued. The latest statistics on the balance of payments pointed to limited capital outflows in the first quarter of 2020 (Chart 2.20). In particular, portfolio investment recorded net outflows mainly as residents increased overseas security purchases and international investors reduced their holdings of Mainland equities. Direct investment recorded net inflows during the period due to robust inward direct investment by non-residents. Meanwhile, other investment recorded strong net inflows due to increased cross-border borrowing of residents as well as the strong repayment of trade credit by non-residents in the first quarter.

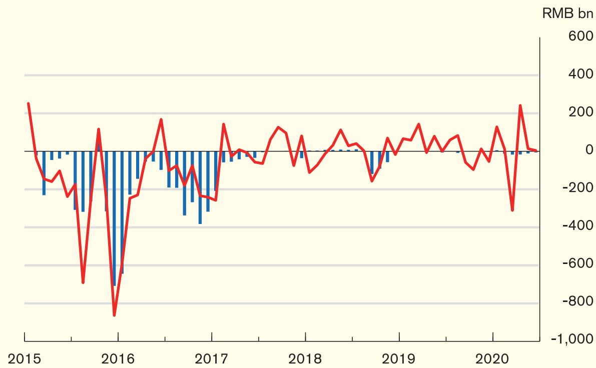
Chart 2.20
Mainland China: Net cross-border capital flows by type of flows



Sources: CEIC, SAFE and HKMA staff estimates.

Changes in Mainland foreign exchange (FX) reserves and the PBoC FX asset position, two common indicators related to cross-border capital flows, also pointed to subdued capital outflow pressures in the first half of 2020. Excluding the valuation effect, Mainland FX reserves are estimated to have increased in the first half of 2020 while the PBoC FX asset position slightly decreased (Chart 2.21). Overall, Mainland headline foreign reserves remained largely stable at above US$3 trillion.

Chart 2.21
Mainland China: Changes in PBoC FX asset position and FX reserves



Sources: CEIC, SAFE and HKMA staff estimates.

Despite subdued capital outflow pressure, the volatility in cross-border capital flows appeared to have increased in the second quarter amid uncertainties in the development of the pandemic and the US-China tensions. In the short run, capital flows are likely to stay volatile as uncertainties may continue to weigh on market sentiment. That said, further opening up of the Mainland financial markets is likely to attract foreign investment and thus provide support to the exchange rate[11]. In fact, based on more frequent and recent data, there were significant net inflows into the equity market in the second quarter of 2020, reversing the outflow trend in the first quarter.

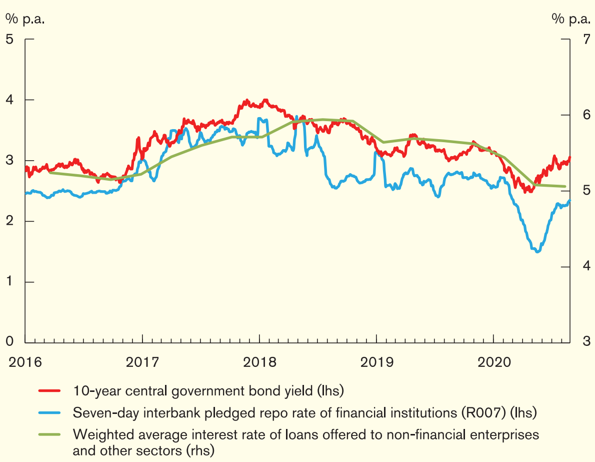
[11] For instance, the Mainland authorities lifted foreign ownership limits on securities and fund management firms in April.

Fiscal and monetary policy

On the monetary policy front, while adopting a prudent monetary policy stance, the PBoC took several steps to lower financing costs for the real sector in the review period. Apart from directly cutting the interest rates, such as the one-year medium-term lending facility rate and the loan prime rate in April, the PBoC facilitated bank lending particularly to smaller firms by cutting RRR twice in March and April, and also providing re-lending and re-discounting support for smaller banks. In addition, the PBoC created two new policy tools in early June to encourage banks to extend loan repayment deadlines and increase non-collateral lending to small borrowers.

As a result of the accommodative measures, liquidity stayed largely ample in the banking system. Both the average seven-day interbank pledged repo rate of financial institutions (R007) and the 10-year central government bond yield trended down in the first four months of 2020, before picking up gradually since May, in part reflecting accelerated government bond issuance and the recovery in funding demand amid the resumption of work. Despite the increase, interbank funding costs remained low compared with previous years. Reflecting favourable liquidity conditions, the weighted average bank lending rate to the non-financial sector declined in the first half of 2020 (Chart 2.22).

Chart 2.22
Mainland China: Major market interest rates

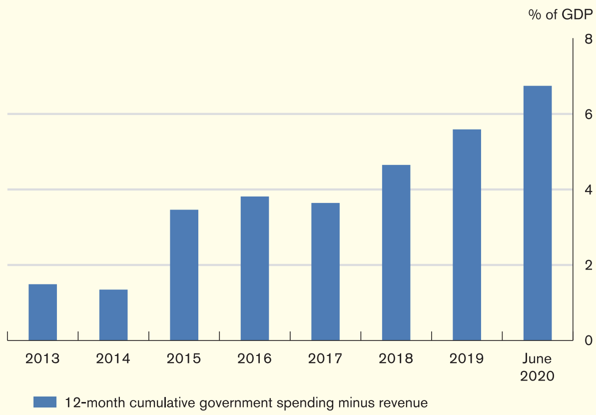


Sources: CEIC, PBoC and HKMA staff estimates.

On the fiscal policy front, the government adopted a more proactive stance amid recent economic headwinds. In particular, the government announced in May that it would raise the fiscal deficit target to 3.6% in 2020 from 2.8% in 2019, with tax and fee breaks to be provided, especially to smaller firms which were the most affected by the COVID-19 outbreak.

Reflecting the economic slowdown and the government's efforts to reduce the tax burden and fees for the real economy, the overall government tax revenue declined 11.3% year on year in the first half of 2020. In contrast, overall public expenditure remained largely stable during the period. As a result, the 12-month cumulative gap between expenditure and revenue in the government's general public budget and government-managed funds widened further to 6.7% of GDP in June 2020, after rising to 5.6% in 2019 (Chart 2.23).

Chart 2.23
Mainland China: Difference between public spending and public revenue



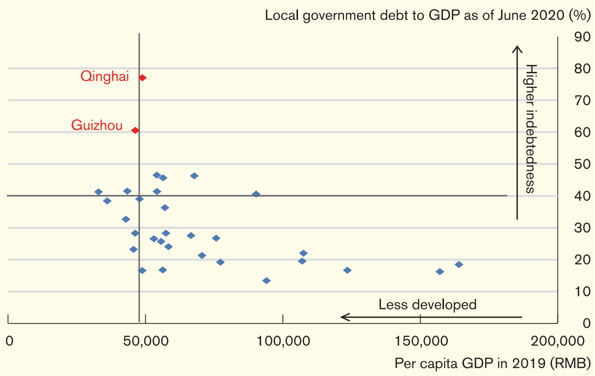
Sources: Wind, MoF and HKMA staff estimates.

In view of the funding shortfall and increased needs to support the economy, Mainland authorities announced this year to issue RMB1 trillion in special treasury bonds to support infrastructure investment and fight the pandemic. The authorities also decided to increase the local government special bond quota to RMB3.75 trillion from RMB2.15 trillion in 2019. Amid accelerated bond issuance, the

outstanding local government debt increased by 14.3% from the end of 2019 to RMB24 trillion at the end of June 2020.

The overall risk of local government debt remains manageable as the local government debt-to-GDP ratio stays at a relatively low level, albeit edging higher to 24.4% at the end of June 2020 from 21.5% at the end of 2019. However, some local governments may face refinancing pressures given their relatively higher debt-to-GDP ratios, but weaker economic fundamentals (Chart 2.24).

Chart 2.24
Mainland China: Local government debt to GDP ratio and per capita GDP by province



Sources: Wind and HKMA staff estimates.

Box 2
A daily index tracking Mainland China's economic conditions

Introduction

The economic recovery in Mainland China is facing high uncertainties due not only to the development of the pandemic, but also the renewed US-China tensions. Against this backdrop, it would be useful to policy makers if high-frequency indicators are available to help monitor economic activities closely. However, in practice, most aggregate-level economic indicators are available only monthly or quarterly with a considerable publication lag. While some higher-frequency indicators are available at the sectoral level[12], these indicators are often subject to noises and point to different directions, making it difficult to get a clear picture of the overall economic performance.

This Box introduces a daily composite economic condition index to provide a more up-to-date assessment of aggregate economic activities in Mainland China. The component indicators of this daily economic condition index are 13 Mainland sectoral higher-frequency indicators that are publicly available. Our composite economic condition index tracks economic activities closely with the advantage of being more timely than traditional aggregate-level indicators.

Data and methodology

Our daily index is built on higher-frequency indicators covering various aspects of economic activities in Mainland industrial and service sectors. Table B2.A lists the details of these indicators. On the industrial side, the indicators are: (1) coal consumption by six major power plants; (2) coke coal production; (3) crude steel production; (4) utilisation rate of blast furnace; (5) utilisation rate of auto tyre production; (6) the China Containerised Freight Index (export); and (7) importation delivery volume of iron ore.

The first five indicators mainly capture production related activities and the last two indicators partly capture trade or logistics related activities. On the service side, the indicators include: (1) floor space of commercial buildings sold; (2) land acquisition area; (3) automobile retail sales; (4) cinema box office sales; (5) urban traffic congestion index; and (6) subway passenger volume. The first four indictors measure consumption of durable goods and entertainment services, while the last two indictors track inner-city transportation and partly capture work resumption status.

Table B2.A
Component indicators of our daily index

Indicators	Starting Date	Frequency
Industry-related		
1. Coal consumption by 6 major power plants	01/10/2009	Daily
2. Coke coal production	10/06/2014	10 days
3. Crude steel production	04/01/2009	10 days
4. Blast furnace utilisation rate	28/07/2012	Weekly
5. Auto tyre production utilisation rate	01/06/2013	Weekly
6. China Containerized Freight Index (export)	11/01/2002	Weekly
7. Iron ore importation delivery volume	03/06/2010	Weekly
Service-related		
1. Floor space of commercial buildings sold in 30 major cities	01/01/2010	Daily
2. Land acquisition area in 100 cities	31/12/2007	Weekly
3. Automobile retail sales	06/03/2015	Weekly
4. Cinema box office sales	25/02/2013	Weekly
5. Urban traffic congestion index for 100 cities	01/01/2017	Daily
6. Subway passenger volume in 6 major cities	27/07/2017	Daily

Source: Wind.

To construct our daily index, we use the Dynamic Factor Model (DFM), a standard tool for analysing high-dimensional time series and a widely used model in economic condition analysis[13]. The DFM extracts a daily economic activity index out of the 13 component indicators. One merit of the DFM is that it can filter out idiosyncratic shocks and capture a latent common "trend" from a set of time series, which suits well the purpose of the study.

12 By higher-frequency indicators, we refer to indicators with reporting intervals shorter than one month.

13 For example, see Aruoba et al. (2009), Altissimo et al. (2010), Giannone et al. (2008), etc.

The specification of the DFM can be represented as follows:

$$\mathbf{x}_t = \boldsymbol{\Lambda}\mathbf{f}_t + \mathbf{u}_t$$
$$\mathbf{f}_t = \boldsymbol{\Phi}(L)\mathbf{z}_t,$$

where $\mathbf{x}_t$ is a vector containing 13 higher-frequency economic indicators listed above, $\mathbf{f}_t$ is a vector of static factors and the economic condition index we are interested in, and $\boldsymbol{\Lambda}$ is a matrix of factor loadings. In this specification, each indicator $x_{i,t}$ is the sum of two independent and unobservable components: a common component $\boldsymbol{\lambda}_i'\mathbf{f}_t$, and the remaining idiosyncratic component $u_{i,t}$. As a latent vector, $\mathbf{f}_t$ is function of $\mathbf{z}_t$, a vector of dynamic factors driving the co-movements of all individual indicators, with $\boldsymbol{\Phi}(L)$, a lag polynomial matrix of constants loading onto it.[14]

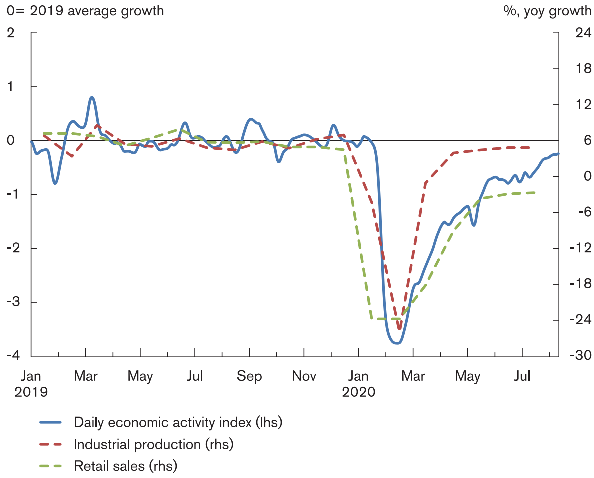
All indicators are adjusted and transformed into daily data following the common practice in literature.[15, 16] A few points are worthy of note. First, all indicators are expressed as year-on-year growth, facilitating an easier comparison with official economic indicators. Second, we calculate seven-day moving average of all daily observations to reduce volatility while maintaining the sensitivity to detect any turning points. Third, all indicators are standardized to equalize the impacts of their volatility.

Result

Our daily economic activity index covers the period from January 2019 to 10 August 2020. In particular, this index measures how much economic activities in a specific day deviates from the average pace of economic expansion in the year of 2019. Positive values indicate better economic conditions than the 2019 average, whereas negative values signal worse economic conditions.

Our index appears to track official monthly indicators well, both before and after the COVID-19 outbreak. Chart B2.1 plots the index against two key monthly economic indicators, namely the year-on-year growth of industrial production and retail sales. The Chart shows that the daily index and the two economic indicators co-moved over time, with high correlation coefficients of 0.843 and 0.848 respectively. Along with industrial production and retail sales, our daily index plummeted in February amid the COVID-19 outbreak, followed by a rebound in the following months as work resumption started.

Chart B2.1
A comparison between in-house index and official indicators



Notes: (1) A zero value on the left axis is associated with our index expanding at its 2019 average growth rate. Positive values indicate better-than-average conditions, whereas negative values indicate worse-than-average economic growth.
(2) National Bureau of Statistics of China only reports cumulative growth of retail sales for January and February.

Sources: Wind and HKMA staff estimates.

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14 We estimate the DFM using the two-step algorithm as proposed by Doz et al. (2011). In the first step, we estimate the preliminary parameters of the model with principle component analysis, using a balanced panel of data. In the second step, we apply the Kalman smoother to the data panel and re-estimate the factors as latent states based on the estimates obtained in the first step. One advantage of the Kalman smoother is allowing unbalanced data sets with missing values at the end of the panel, which is helpful for economic condition analysis since economic indicators are usually released on a staggered basis.

15 (1) Chinese New Year effect is smoothed for 2019 to moderate highly volatile movements in January and February due to seasonal effect. Yet, it's not adjusted for 2020 as the nationwide lockdown and suspension of economic activities in the COVID-19 outbreak disrupted the seasonal pattern.
(2) Outliers are winsorised.

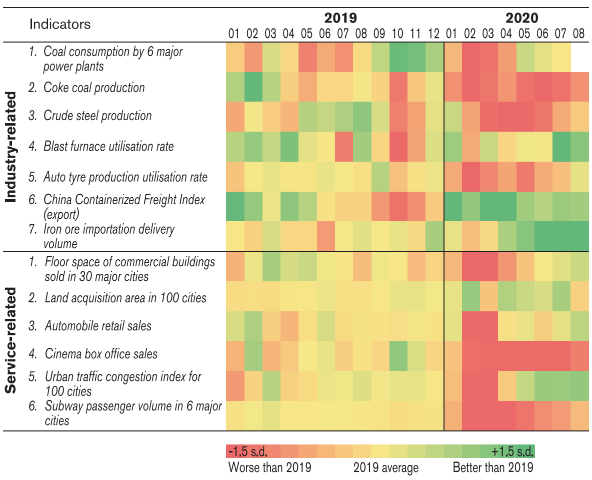
16 In frequency conversion, flow series (sales and production variables) are converted with quadratic interpolation, while others are linear-interpolated.

Our daily index points to several interesting observations:

- First, our index suggests that the Mainland economy continued to rebound in recent months but with increased volatilities. The bumpy recovery likely reflected increased uncertainty amid the new developments of the pandemic at home and abroad, recent widespread floods and mudslides in Southern China, and increased US-China tensions.

- Second, while the economy was recovering, our daily index suggests that the expansion pace of economic activities had not yet reverted to the 2019 level. A closer look at the 13 constituent indicators of the index shows that around half of them were either still below the 2019 level or softened in recent weeks (Chart B2.2). More specifically, business expansion in some heavy industries (production of coke coal and crude steel) and certain service industries (cinemas and subways) remained lacklustre compared with the previous year. While some indicators returned to the 2019 level, their growth rate softened in recent weeks including utilisation rate of blast furnace and land sales, as the economy faced increased headwinds.

Chart B2.2
A heatmap of individual indicators' movement over time



Notes: (1) The readings in August are a simple average of the first ten days.
(2) The release of the component indicator of coal consumption by six major power plants has been suspended since July 6. Thus, the cell for August is left blank.
Sources: Wind and HKMA staff estimates.

Concluding remarks

This Box introduces a daily index tracking Mainland China's economic conditions, constructed from 13 Mainland sectoral higher-frequency indicators that are publicly available. As a monitoring tool, this daily index appears to track official monthly indicators well. For the most recent period, our daily index suggests that the Mainland economy continued to rebound but with increased volatilities. In addition, our index shows that while the economy was recovering, the expansion pace of economic activities had not yet reverted to the 2019 level.

Care should be taken when interpreting the daily index. First, it is a qualitative economic condition tracker rather than a quantitative nowcast of GDP, and it measures only the current economic conditions relative to a historical point such as the 2019 level. Second, the higher-frequency indicators included in our model may not be representative enough for the whole economy (e.g. e-commerce is not included as data are not available), although the underlying trend of the indicators should be largely in line with the overall economic performance.

Reference

Altissimo, Filippo, et al. "New Eurocoin: Tracking economic growth in real time." *The Review of Economics and Statistics* 92.4 (2010): 1024–1034.

Aruoba, S. Borağan, Francis X. Diebold, and Chiara Scotti. "Real-time measurement of business conditions." *Journal of Business & Economic Statistics* 27.4 (2009): 417–427.

Doz, Catherine, Domenico Giannone, and Lucrezia Reichlin. "A two-step estimator for large approximate dynamic factor models based on Kalman filtering." *Journal of Econometrics* 164.1 (2011): 188–205.

Giannone, Domenico, Lucrezia Reichlin, and David Small. "Nowcasting: The real-time informational content of macroeconomic data." *Journal of Monetary Economics* 55.4 (2008): 665–676.

3. Domestic economy

Hong Kong's economic recession deepened in the first half of 2020 as the pandemic dealt a severe blow to private consumption and investment, as well as external goods trade and tourism. In response, the Government and the HKMA swiftly introduced a series of large-scale measures to support the real economy. Economic performance for the second half of the year is still highly challenging given the lingering COVID-19 pandemic, the US-China tensions and uncertainties surrounding the development of the global economy. Given multiple headwinds, the labour market will continue to be under stress while local inflationary pressures are expected to recede further in the near term.

3.1 Real activities

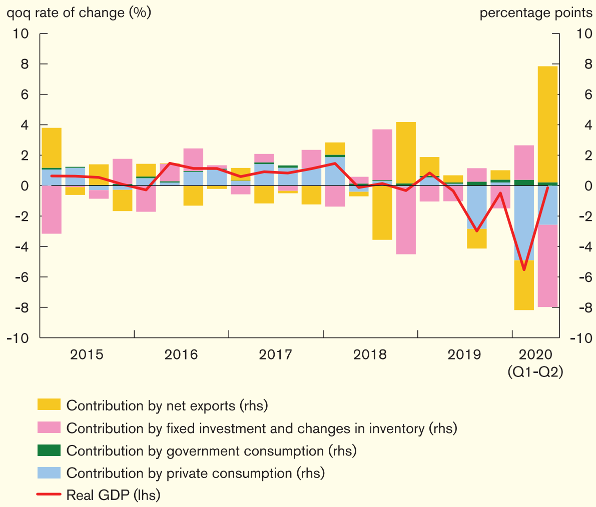
Hong Kong's economic recession deepened in the first half of 2020 amid the COVID-19 pandemic. On a year-on-year comparison, real gross domestic product (GDP) fell by 9.1% in the first quarter, marking the most acute single-quarter contraction on record, and similarly by 9.0% in the second quarter (Table 3.A). The latest sectoral GDP data indicate that almost all economic sectors recorded a year-on-year decline in activities in the first quarter, with the trade, retail and tourism-related sectors even seeing double-digit decreases.

Table 3.A
Real GDP growth

		Year-on-year growth rate (%)	Seasonally adjusted quarter-on-quarter growth rate (%)
2019	Q1	0.7	0.8
	Q2	0.4	-0.3
	Q3	-2.8	-3.0
	Q4	-3.0	-0.5
2020	Q1	-9.1	-5.5
	Q2	-9.0	-0.1

Source: C&SD.

Chart 3.1
Real GDP growth and contribution by major expenditure components

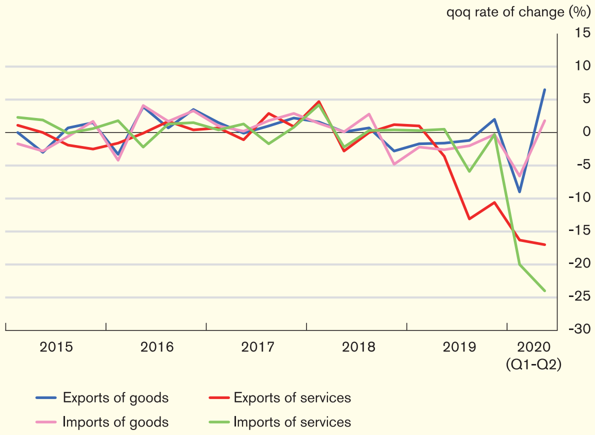


Note: Growth rates are seasonally adjusted.
Sources: C&SD and HKMA staff estimates.

On a quarter-on-quarter basis, real GDP declined at a record rate of 5.5% in the first quarter and edged down by 0.1% in the second quarter (Table 3.A and Chart 3.1). Domestically, private consumption plunged within the first half of the year, partly reflecting austere labour market conditions and disruptions to consumption-related activities caused by social distancing measures. Overall investment spending also retreated in the second quarter amid weak business sentiment. Externally, trade in goods

declined in the first quarter due in part to pandemic-induced supply chain disruptions, but the goods trade performance picked up in the second quarter as production activities in Mainland China largely resumed (Chart 3.2). Service trade recorded an enlarged decline within the first half of the year partly because global tourism came to a halt.[17] Overall, net trade contributed negatively to GDP in the first quarter, but added to GDP in the second quarter partly because merchandise exports picked up faster than imports.

Chart 3.2
Exports and imports in real terms



Note: Growth rates are seasonally adjusted.
Source: C&SD.

In response to the pandemic, the Government swiftly launched relief measures[18] of unprecedented scale to support enterprises and individuals and to safeguard jobs, including the HK$10,000 Cash Payout Scheme and the provision of wage subsidies through the Employment Support Scheme. The HKMA has also taken a three-pronged approach to bolster the banking sector in support of the real economy. The measures comprise proactive coordination with the banking sector to ease cash-flow pressures on enterprises and households, releasing buffers to boost the lending capacity of banks and ensuring that banks have abundant liquidity to meet their needs and support domestic economic activities.

Hong Kong's economic performance for the rest of 2020 is still highly challenging given the lingering pandemic, which poses substantial downside risks to the global and domestic economies. On the external front, exports will continue to struggle because of a standstill in inbound tourism and weak global demand.[19] Domestically, weak private consumption will likely persist amid social distancing, weakening labour market conditions and easing household income. As for fixed capital formation, fragile business confidence may dampen capital expenditure, as well as building and construction activities. Nonetheless, increased public demand (e.g. government consumption) and the massive relief measures introduced by the authorities are anticipated to provide some support to the economy. Taking into account the multiple headwinds, the Government and private-sector analysts revised downwards their forecasts of real GDP growth for the whole of 2020 to a range between -6% and -8% and a mean of -6.8% respectively. This subdued economic outlook is subject to a number of risks and uncertainties as discussed in previous chapters. In particular, the economy could fluctuate in the ebb and flow of the COVID-19 pandemic until an effective vaccine or treatment is widely available.

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17 For example, inbound tourist arrivals have nosedived since the onset of the outbreak in late January 2020, or falling by 90% year-on-year during the first half of 2020. In April, the average number of visitors fell to as low as about 140 per day.

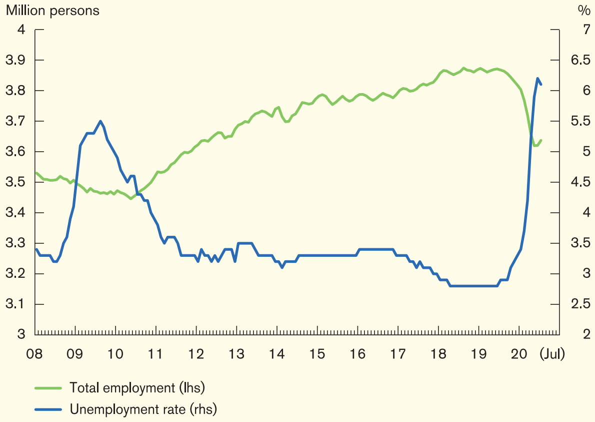
18 These massive measures include the three rounds of Anti-epidemic Fund measures and the one-off relief measures in the 2020/21 Budget. Their total size amounts to over HK$300 billion, representing about 10-11% of GDP. The Government estimated that there would be a supporting effect of slightly more than 5 percentage points of GDP on the Hong Kong economy.

19 The US president signed an executive order on 14 July 2020, revoking Hong Kong's preferential trade status. Consequently, goods exported to the US from Hong Kong could be subject to the same tariffs or export controls as goods of Mainland origin. This will have limited direct impact on Hong Kong's economy since domestic exports to the US made up only 0.1% of total exports. Moreover, the majority of re-exports to the US from the Mainland is already subject to additional tariffs. For imports, the US supplied just 4.8% of our total imports, with strategically sensitive goods such as high technology products constituting a negligible share.

3.2 Labour market conditions

The labour market has come under significant pressures between January and July. The seasonally adjusted unemployment rate rose to 6.1% in July, surpassing the peak of 5.5% in the aftermath of the 2008 global financial crisis (Chart 3.3). The construction, retail, accommodation and food services sectors even saw their unemployment rates rising to over 10%.[20] The underemployment rate also climbed visibly to 3.5% in July. The labour force participation rate edged down to a record low of 59.1% in May, partly reflecting a cyclical response to the sharp deterioration in economic conditions. On the demand side, Box 3 analyses the recent changes in labour demand using a timely big dataset of online job advertisements, and the results reveal that vacancies stayed low recently. As for labour compensation, real payroll recorded a year-on-year decline of 0.3% in the first quarter. Looking ahead, the Employment Support Scheme introduced by the Government should help retain jobs, but the labour market will continue to face challenges given the sluggish economic outlook discussed above.

Chart 3.3
Labour market conditions



Source: C&SD.

3.3 Inflation

Local inflationary pressures softened further in the first seven months of 2020 alongside the deepened economic recession. On a year-on-year comparison, the underlying consumer price inflation rate decelerated from 2.9% in the first quarter to 1.8% in the second quarter, and receded further to 0.2% in July (Chart 3.4).[21] Inflation momentum, as measured by the annualised three-month-on-three-month underlying inflation rate, also recorded an enlarged decline, falling below zero in recent months. The weak inflation momentum reflected a fairly broad-based moderation in the composite consumer price index (CCPI) components. In particular, prices of basic food items recorded a mild decline in recent months after reaching a peak early this year, and prices of other consumable items, such as durable goods, also saw further declines. For services, growth in the housing rental component of the CCPI continued on its downward trend, reflecting the feed-through of the earlier consolidation in fresh-letting residential rentals (Chart 3.5). Prices of meals bought away from home declined markedly in July owing to the deeper discounts offered by restaurants. That said, real unit labour costs increased cyclically in the first quarter as labour productivity declined at an even faster rate than labour compensation amid the sudden fall-off in GDP (Chart 3.6). A similar situation occurred after the 2008 global financial crisis, and the impact of increased unit labour cost on inflation is expected to be small at the current juncture given the sharp contraction in aggregate demand.

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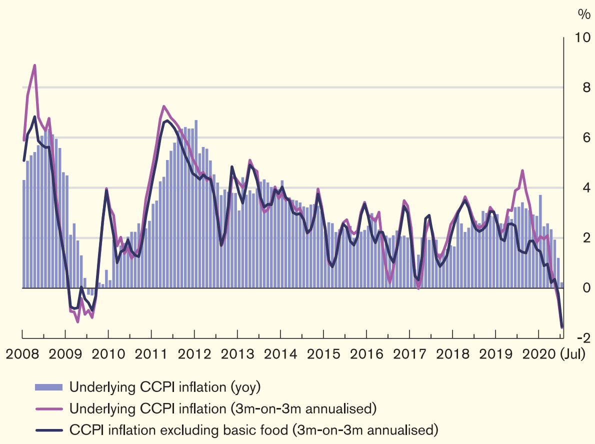
[20] For example, the unemployment rate of the food and beverage services sector rose to 14.6% and that of the construction sector reached 11.3% in July.

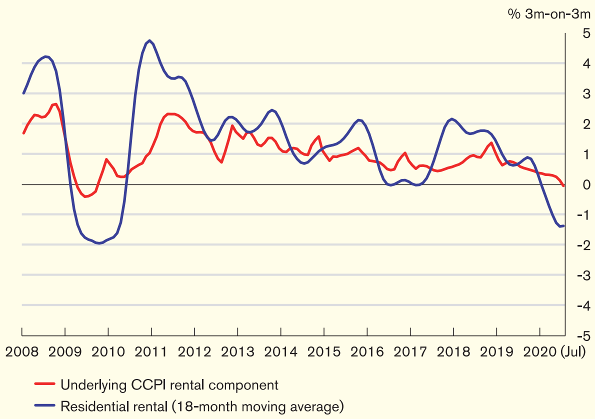
[21] The headline inflation rate turned negative in July, with the price index declining by 2.3% year-on-year due in part to the payment of one-month rentals for public housing tenants by the Government.

Chart 3.4
Different measures of consumer price inflation



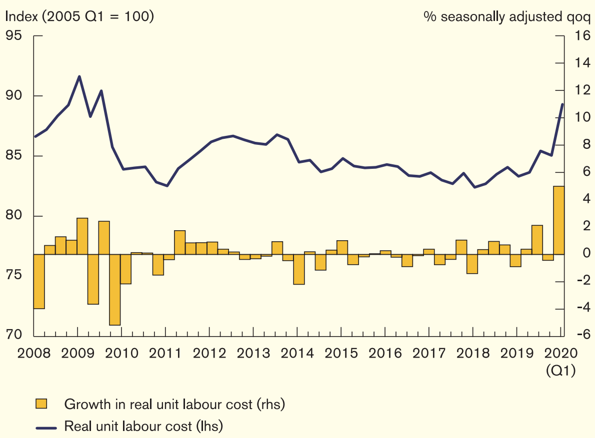
Sources: C&SD and HKMA staff estimates.

Chart 3.5
CCPI rental component and market rental



Sources: C&SD and R&VD.

Chart 3.6
Unit labour cost



Sources: C&SD and HKMA staff estimates.

Local inflation is expected to recede further in the near term. Domestically, weak economic conditions, as reflected in the negative estimated output gap, will continue to ease local inflation. Meanwhile, the earlier decline in fresh-letting residential rentals will exert dampening pressure on the housing component of the CCPI in the near term. Externally, the sluggish global demand is anticipated to keep imported inflation in check. Against this background, the Government adjusted downward its projections of underlying and headline inflation rates for 2020 to 1.8% and 0.8% respectively. The latest market consensus forecasts the headline inflation rate for 2020 to be 0.9%.

Box 3
A big data analysis of Hong Kong's labour demand using online job advertisements

Introduction

With the deepening economic recession and the lingering COVID-19 outbreak, Hong Kong's labour market is facing unprecedented pressures. Against this backdrop, this Box explores big data of online job advertisements to track domestic labour demand in recent months.[22] As these online job postings offer real-time access with high granularity, we can detect labour demand changes in a more timely manner and take a more nuanced look at the companies' hiring situation. Our analysis also highlights some caveats for using online job advertisement data.

How to collect online job advertisement information?

Nowadays, job vacancy websites are one of the major sources for job seekers looking for job opportunities, as well as for companies' hiring. We choose a representative online job searching platform called JobMarket for our analysis, as it has a long history[23] and its print version is the first bilingual classified recruitment publication in Hong Kong. Unlike some other online platforms, an advertising fee is required for posting job advertisements on JobMarket so they are more likely to reflect genuine labour demand. In addition, these job advertisements are available almost real-time, compared favourably with the quarterly official job vacancy data which have a time lag.

In practice, we collect job advertisements from JobMarket through daily web scraping. Each job advertisement contains considerable information, including employment types, education and skill requirements, and sometimes the remuneration package, such as salaries and benefits. Because companies or recruitment agencies may post the same job advertisement multiple times to increase the chance of hiring, we filter out any duplicated job advertisements before transforming them into a structured database for further analysis.

Recent changes in labour demand through the lens of online job advertisements

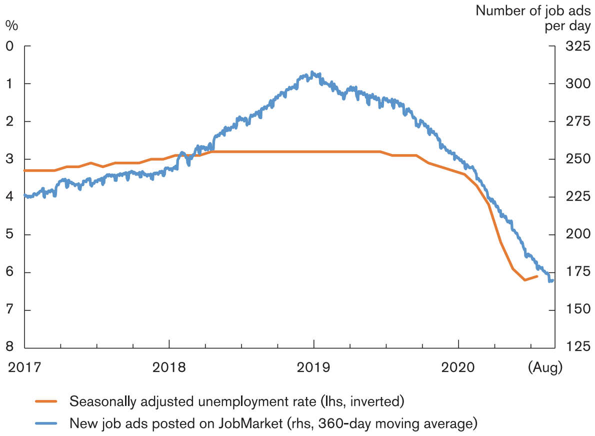
<u>Overall labour demand</u>

Although the unemployment rate only started to rise more visibly in the third quarter of 2019, the weakness of the overall labour demand could be identified earlier, as the total number of new job advertisements posted on JobMarket peaked in January 2019 (Chart B3.1) amid the US-China tensions. This suggests that online job vacancy postings are quite useful as an early indicator. With the "double whammy" of local social incidents and later the COVID-19 outbreak, the total number of new job advertisements has dropped at a faster pace since the second half of 2019, and the overall labour demand remains lacklustre in the near term.

[22] Apart from vacancy there are other indicators of labour demand, such as employment numbers or sentiment, which are not discussed in this study.

[23] The print version of JobMarket was first published in 1985 and its online platform was established in 1999.

Chart B3.1
Online job advertisement number and unemployment rate



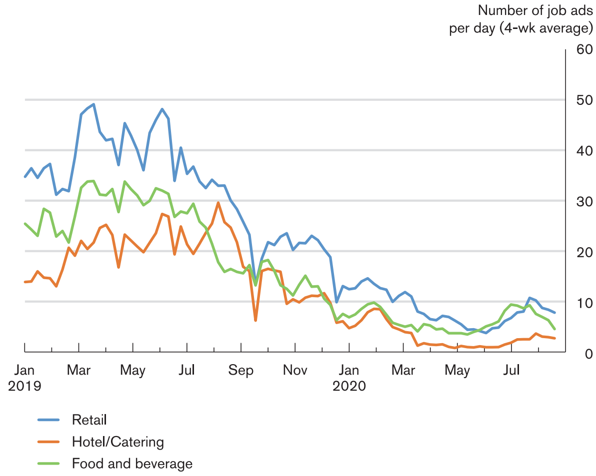
Note: To have a better comparison between the job advertisement numbers and the seasonally adjusted unemployment rate, we take the 360-day moving average to remove the seasonality of job advertisement postings.
Sources: C&SD, JobMarket and HKMA staff estimates.

Labour demand by sectors

As consumption and tourism-related industries were hit hard by social incidents and the COVID-19 outbreak[24], new job vacancies in the retail, hotel/catering and food and beverage services sectors have shrunk drastically since mid-2019 (Chart B3.2). Our job advertisement data reveal there were tentative signs of a pick-up in job vacancies in the retail and food and beverage services sectors when the local infection rate was contained in May and June. But the job postings declined again in August along with a rise in local infections starting from July. On the other hand, recruitment activities in the hotel/catering sector remained mute as there was no sign of a recovery in tourism and travel.

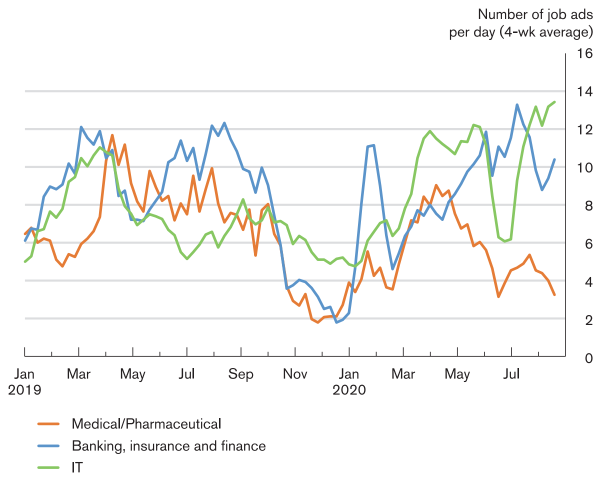
However, labour demand in some other sectors responded differently. Probably due to a temporary rise in demand for medical specialists in coping with the outbreak, new job openings in the medical/pharmaceutical industries increased in the first four months of 2020 (Chart B3.3), before declining in May and June. Work-from-home arrangements during the semi-lockdown period may also have stimulated the demand for IT personnel between March and May, as well as in mid-July. As local financial activities became more vibrant in the second quarter, recruitment activity in the financial sector gradually recovered to the mid-2019 level in June, before moderating again in July – August amid the rise in local COVID-19 cases.

Chart B3.2
Number of job advertisements in consumption and tourism-related sectors



Sources: JobMarket and HKMA staff estimates.

Chart B3.3
Number of job advertisements in selected sectors



Sources: JobMarket and HKMA staff estimates.

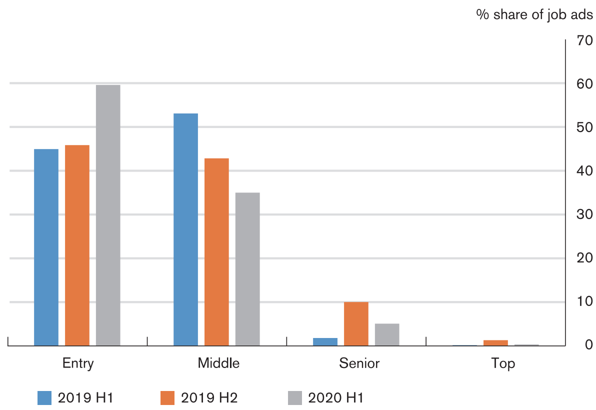
24 In particular, the real GDP of wholesale and retail trades slumped by 57% year-on-year in the first quarter of 2020, and that of accommodation and food services fell by 48% year-on-year.

Labour demand by skill levels

In addition to sectoral patterns, online job advertisements can also reveal the type of skill sets demanded by companies. In JobMarket, a job can be classified into four levels: entry, middle, senior and top.[25] Chart B3.4 shows that most of the online job advertisements in JobMarket pertain to entry and middle levels, and the share of middle-level job openings has declined since mid-2019. Among the middle-level job openings previously, most only required secondary education qualifications, but the percentage of tertiary education requirements has increased following the COVID-19 outbreak (Chart B3.5). From another angle, more fresh graduate jobs[26] were available during the same period, particularly for graduates with a tertiary education (Chart B3.6). Taken together, there is evidence that companies are upskilling their workforce by hiring new graduates with higher education levels during the current economic downturn, which is similar to the phenomenon seen in the US after the Great Recession in 2008.[27]

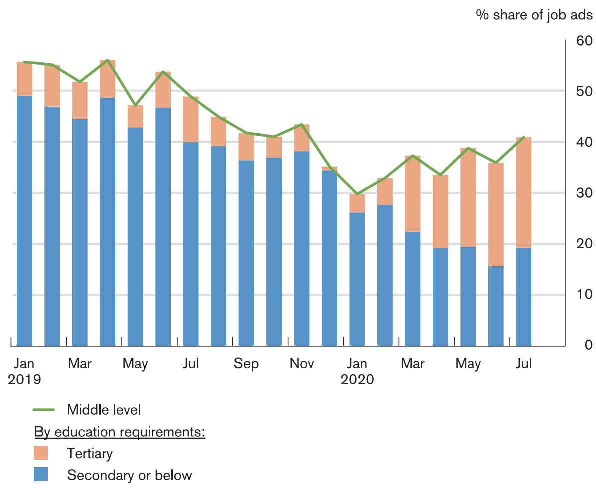
On the flip side, the upskilling implies that experienced (e.g. middle-level) workers with lower education levels will find it more difficult in searching for job during the current recession. Additionally, this recession-induced change in demand for skills may impact on future labour market recovery as it may lead to a higher skill mismatch, which merits close monitoring in the period ahead.

Chart B3.4
Share of job advertisements by job levels



Note: The job advertisements without specifying their job levels are excluded in calculating the percentage share.
Sources: JobMarket and HKMA staff estimates.

Chart B3.5
Share of middle-level job advertisements by education levels



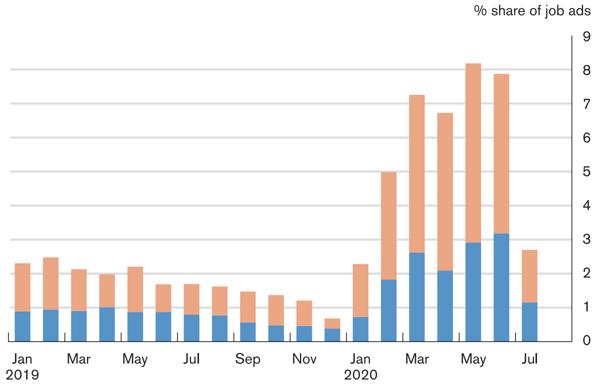
Note: The job advertisements without specifying their job levels are excluded in calculating the percentage share.
Sources: JobMarket and HKMA staff estimates.

25 Some job advertisements without specifying their job levels are considered as unclassified and excluded in this analysis.

26 In this study, a fresh graduate refers to a person who has finished their primary or secondary school, college, or university education without working experience. And those jobs for which a fresh graduate is suitable to apply are called fresh graduate jobs for simplicity.

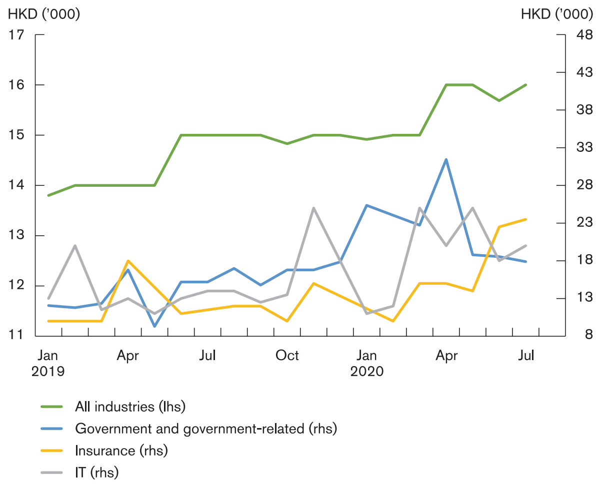
27 See Hershbein, B., and Kahn, L. B. (2018), "Do recessions accelerate routine-biased technological change? Evidence from vacancy postings", *American Economic Review*, 108(7), 1737–72.

Chart B3.6
Share of fresh graduate job advertisements by education levels



Note: A majority of job advertisements do not specify whether their job openings are suitable for fresh graduates. For completeness, these advertisements are included in calculating the percentage share.
Sources: JobMarket and HKMA staff estimates.

Chart B3.7
Median starting salary of full-time jobs



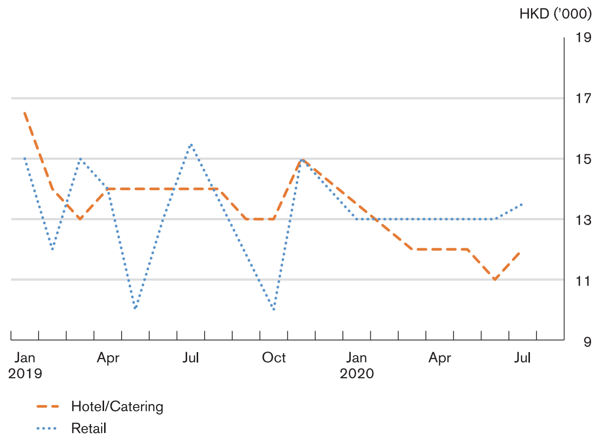
Note: Since not all companies provide salary offers in their job advertisements, some data are extrapolated using time trends.
Sources: JobMarket and HKMA staff estimates.

Salary offers in online job advertisements

Despite the worsening economic conditions in the first half of 2020, the overall job salary offer for full-time employees was on the rise (Chart B3.7). In fact, the median starting salary for all industries increased by around 7% in the first quarter of 2020 compared with a year ago.[28] Sectoral data reveal that increases in salary offers were found in the IT, insurance and some government-related sectors.

By contrast, when we look at the entry-level salary offers in the retail and hotel/catering sectors, which are usually perceived as the most vulnerable in the current economic climate, the starting salary decreased in the hotel/catering sector, while it remained roughly stable in the retail segment (Chart B3.8).

Chart B3.8
Median starting salary of full-time entry-level jobs in selected sectors



Note: Since not all companies provide salary offers in their job advertisements, some data are extrapolated using time trends.
Sources: JobMarket and HKMA staff estimates.

28 According to the C&SD, nominal wages and payrolls indices increased by 2.2% and 3.2% respectively in the first quarter of 2020 compared with a year ago. It should be noted that these indices measure the overall wage or salary changes for both new and existing staff members, while salary offers on job advertisements only pertain to new recruitment. As such, they are not strictly comparable.

Concluding remarks

Deterioration in the labour market is one of the key risks to the Hong Kong economy. Our study uses more timely big data on job advertisements posted on the JobMarket website to assess the latest developments in the demand for labour. We find that the total number of job advertisements can provide an early signal on market trends, and the current low level points to continued weakness in overall labour demand in the near term. In particular, recruitment in the consumption and tourism-related sectors remains quiet as the headwind from COVID-19 has not abated. There is also some evidence of upskilling (i.e. firms demanding higher-skilled workers) during this pandemic-induced economic downturn. This implies that middle-level workers with lower educational qualifications would face more difficulty in finding a job and there is a higher risk of skill mismatch hampering future labour market recovery.

However, there are some bright spots. For example, some industries, such as the medical and IT sectors, hastened their recruitment in response to the COVID-19 outbreak and the increased demand for digitalisation, and hiring in the financial sector recovered on the back of resilient financial market activities in the second quarter. Salary offers for full-time employees in some sectors such as IT, insurance and government-related sectors still saw some growth despite the economic downturn. Taken together, our study illustrates that big data on job advertisements could provide timely and nuanced information on firms' labour demand.

Finally, despite the usefulness of the job advertisement data, some caveats are worth attention. First, because not all job vacancies are posted online, the online job advertisements may not entirely reflect patterns in the whole population.[29] Second, job vacancies represent just one aspect of labour demand and they cannot fully capture the adjustment of labour inputs. For example, apart from reducing vacancies, companies may ask their employees to shorten working hours or take no-pay leave. Other technical issues such as incomplete information on job advertisements could also affect our analysis. As a result, the online job advertisement data should be considered as complementary, rather than a substitute, to the official vacancy data and other traditional labour statistics.

[29] That said, vacancies for available jobs have been increasingly advertised online instead of through traditional channels such as newspapers. A cursory look at the online job posting data and the official vacancy statistics also reveal that their aggregate vacancy trends are consistent with each other.

4. Monetary and financial conditions

Partly reflecting the strong equity-related demand for Hong Kong dollars, the Hong Kong dollar exchange rate strengthened close to the strong-side Convertibility Undertaking level since April with the strong-side Convertibility Undertaking triggered 50 times between 21 April and 22 September. Along with the lower US dollar interest rates, Hong Kong Interbank Offered Rates softened across the board amid the expansion of the Aggregate Balance. Overall, Hong Kong's foreign exchange and money markets continued to operate in a smooth and orderly manner. While developments in the COVID-19 outbreak, the US-China tensions and evolving geopolitical conflicts may lead to higher fund flow volatility, Hong Kong is able to withstand the fund flow volatility given its ample foreign reserves and robust banking system.

4.1 Exchange rate and capital flows

The Hong Kong foreign exchange and money markets continued to trade in a smooth and orderly manner although worries about global economic impacts of the COVID-19 outbreak heightened volatilities in financial markets around the world, including Hong Kong's equity market. As global investors sought more US dollars under risk-off sentiment, US dollar funding costs tightened in March, affecting Hong Kong dollar interbank interest rates under the Linked Exchange Rate System (LERS). While US dollar funding pressure subsequently eased with the Federal Reserve (Fed)'s liquidity programmes,[30] Hong Kong dollar interest rates stayed tight due to the equity-related demand for the Hong Kong dollar coupled with the quarter-end effect. The strong demand for Hong Kong dollars, together with carry trade activities, spurred by the positive Hong Kong dollar-US dollar interest rate spreads, led to the strengthening of the Hong Kong dollar exchange rate to the strong-side Convertibility Undertaking (CU) level (Chart 4.1). As a result, the strong-side CU was triggered six times between 21 April and 27 April. Thereafter, the Hong Kong dollar exchange rate stayed strong at near the 7.75 levels and the strong-side CU was further triggered 44 times between 4 June and 22 September, underpinned by equity-related demand including initial public offering (IPO) activities, the southbound Stock-Connect and dividend payments.

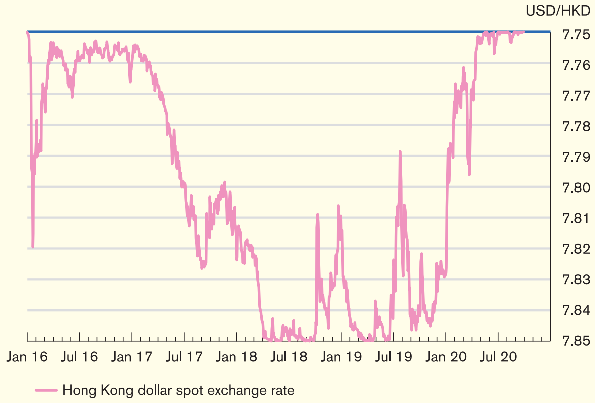
With the strong-side CU being triggered 50 times between 21 April and 22 September, the HKMA sold Hong Kong dollars totalling HK$168.5 billion in accordance with the design of the LERS. In a move to increase market liquidity, the HKMA gradually reduced the issuance of Exchange Fund Bills in late April and early May by a total of HK$20 billion.[31] Taking into account both the triggering of the

[30] Amid considerable volatilities and uncertainties in the global financial markets brought about by the COVID-19 pandemic, the HKMA used the funds obtained through the Fed's temporary repurchase agreement facility for foreign and international monetary authorities (FIMA Repo Facility) to introduce a temporary US Dollar Liquidity Facility (the Facility) to make available US dollar liquidity assistance for licensed banks, with a total of US$10 billion available under the Facility.

[31] To help ensure continued smooth operation of the Hong Kong dollar interbank market amid a volatile global macro environment stemming from the COVID-19 pandemic, the HKMA made available more Hong Kong dollar liquidity in the banking system by reducing the issue size of 91-day Exchange Fund Bills by HK$5 billion in each of the four regular tenders on 21 April, 28 April, 5 May and 12 May 2020. The issuance of the Bills was reduced by HK$20 billion in total and the AB increased by the same amount.

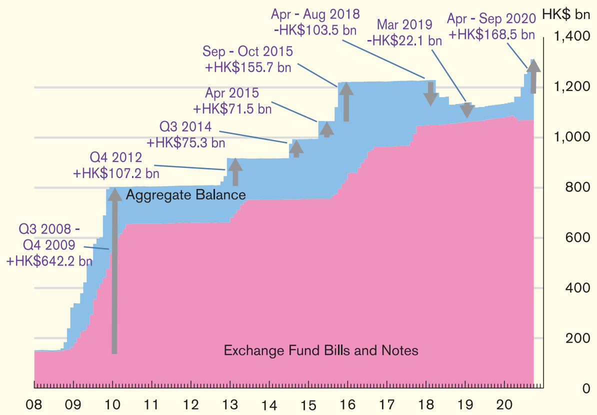
strong-side CU and the reduced issuance of Exchange Fund Bills, the Aggregate Balance (AB) increased from HK$54.3 billion at the end of February to HK$242.5 billion as at 24 September (Chart 4.2). It is important to note that the reduced issuance of Exchange Fund Bills simply represents a change in the component of the Monetary Base, with a shift from the Exchange Fund Paper to the AB. As the Monetary Base remains fully backed by US dollars, such operations are totally consistent with the Currency Board principles.

Chart 4.1
Hong Kong dollar exchange rate



Source: HKMA.

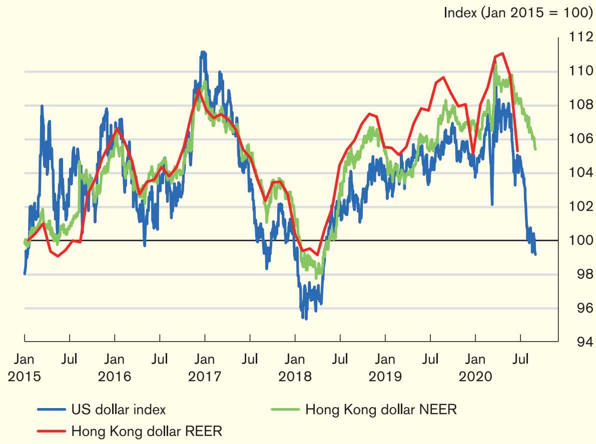
Chart 4.2
Aggregate Balance and Exchange Fund Bills and Notes (EFBNs)



Note: Up to 24 September 2020.
Source: HKMA.

The movement of the Hong Kong dollar nominal effective exchange rate index (NEER) was broadly consistent with the movement of the US dollar. The NEER strengthened in March amid the US dollar funding stress, before moving down more recently along with the weakening of the US dollar (Chart 4.3). The Hong Kong dollar real effective exchange rate index (REER) showed a similar trend as the NEER, because the small inflation differential between Hong Kong and its trading partners only had a limited impact on the REER.

Chart 4.3
NEER and REER



Note: REER is seasonally adjusted and only available on a monthly basis.
Sources: C&SD and HKMA staff estimates.

During the review period, there was an increase of funds flowing to the Hong Kong dollar, as evidenced by the repeated triggering of the strong-side CU. In addition, with total deposits growing in the first seven months of 2020, there were no significant cross-border outflows from the Hong Kong banking system.[32]

Looking ahead, risks of volatile fund flows remain amid uncertainties arising from the COVID-19 outbreak, US-China tensions and evolving geopolitical conflicts. Given the ample foreign reserves position and the robust banking system, Hong Kong is able to withstand the fund flow volatility without compromising its financial stability. Indeed, as the cornerstone of Hong Kong's financial system, the LERS continues to show its strength and resilience to shocks. With free capital mobility and the free convertibility of Hong Kong dollars enshrined in

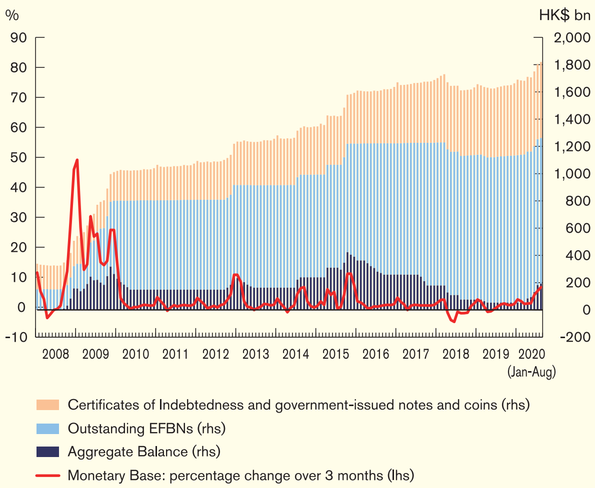
32 For a detailed analysis of Hong Kong's deposit growth during the review period, see section 4.2.

Article 112 of the Basic Law, the LERS remains the most appropriate monetary system for a small, open and highly externally-oriented international financial centre like Hong Kong. The HKMA sees no need and has no intention of changing this well-established system.

4.2 Monetary environment and interest rates

Along with the unprecedented easing measures adopted by various central banks, Hong Kong's monetary environment continued to stay accommodative, with the Hong Kong dollar Monetary Base expanding by 9.4% during the first eight months of 2020 (Chart 4.4). Such an increase mainly reflected the rise in the AB due to the triggering of the strong-side CU since April and the reduced issuance of Exchange Fund Bills. Correspondingly, the outstanding EFBNs decreased slightly, due mainly to the reduced issuance of Exchange Fund Bills. On the other hand, Certificates of Indebtedness (CIs) and government-issued notes and coins as a whole continued to pick up.

Chart 4.4
Monetary Base components



Source: HKMA.

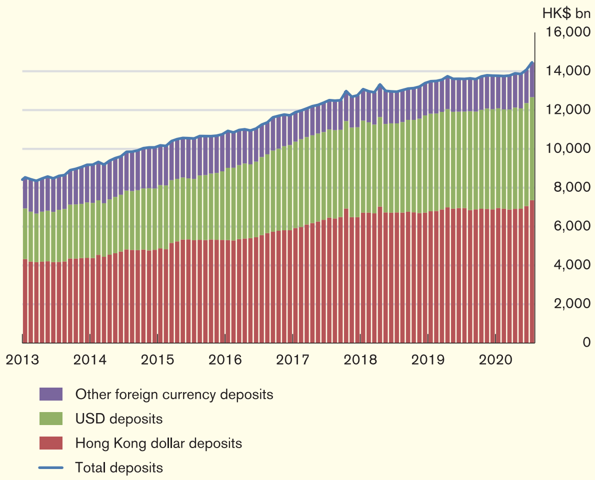
The Hong Kong dollar monetary aggregate grew at a faster pace alongside the expansion of the Monetary Base. For the first seven months of 2020 as a whole, the Hong Kong dollar broad money (HK$M3) expanded by 6.8% after edging up by 0.2% during the preceding seven-month period (since the end of June 2019). Based on the analysis of asset-side counterparts, the growth of HK$M3 was mainly underpinned by the increase in net foreign currency assets held by banks and the Monetary Base as a result of the triggering of the strong-side CU (Chart 4.5). As a major component of HK$M3, Hong Kong dollar deposits rose by 6.8% during the first seven months. Within Hong Kong dollar deposits, demand deposits posted a notable rise, partly driven by investment demand amid buoyant equity market activities since May.

Chart 4.5
Changes in the HK$M3 and the asset-side counterparts

Note: The HK$M3 in the monetary survey has been adjusted to include foreign currency swap deposits.
Source: HKMA staff estimates.

Foreign currency deposits grew at a moderate pace. As a whole, foreign currency deposits increased by 3.1% during the first seven months of 2020, within which US dollar deposits and other foreign currency deposits picked up by 2.9% and 3.8% respectively. Overall, total deposits with authorized institutions (AIs) increased moderately by 5.0% in the first seven months (Chart 4.6).

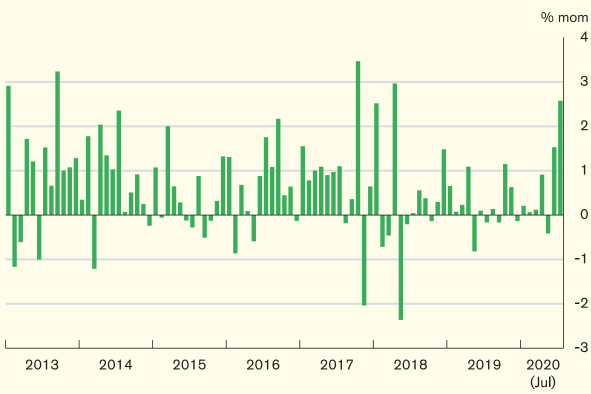
Chart 4.6
Deposits with AIs by currencies



Source: HKMA.

Reflecting the pick-up in total deposits and currency in circulation, total broad money supply grew moderately (Chart 4.7), with total M2 and M3 rising by 5.1% and 5.0% respectively since the end of 2019. However, as monthly monetary statistics are subject to volatilities due to a wide range of transient factors, such as seasonal and IPO-related funding demand as well as business and investment-related activities, caution is required when interpreting the statistics.

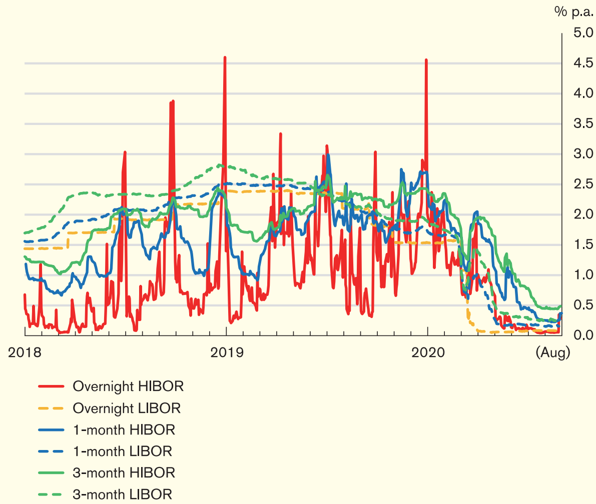
Chart 4.7
Total broad money supply (M2)



Source: HKMA.

Hong Kong interbank offered rates (HIBORs) declined alongside their US dollar counterparts during the review period (Chart 4.8). Although HIBORs were elevated in March as influenced by the US dollar funding stress and local factors, such as IPO-related and quarter-end funding demand, HIBORs declined noticeably stepping into April along with improved liquidity due to the expansion of the AB. Thereafter, volatilities of HIBORs were rather small, with only modest fluctuations stemming from IPO-related funding demand. HIBORs continued to remain steadily low stepping into the third quarter, with the one-month HIBOR averaging around 0.25% in August.

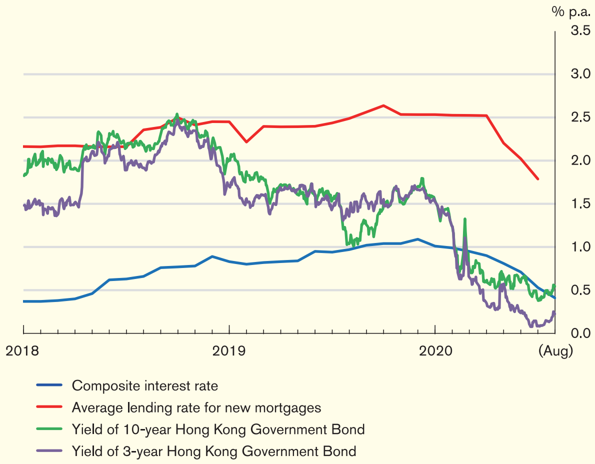
Chart 4.8
Hong Kong dollar and US dollar interbank interest rates



Sources: CEIC and HKMA.

Broadly following movements of the US dollar yield curve, which dropped markedly amid the aggressive monetary easing in the US, the Hong Kong dollar yield curve also declined noticeably during the review period (Chart 4.9). In particular, yields for the short tenors decreased more than those for the long tenors. Compared with the end of 2019, the yield of the 10-year Hong Kong Government Bond declined by 125 basis points to 0.54% at the end of August, while the yield of the three-year Hong Kong Government Bond dropped by 145 basis points to 0.22% during the same period.

Chart 4.9
Yields of Government Bonds, the composite interest rate, and the average lending rate for new mortgages



Sources: HKMA and staff estimates.

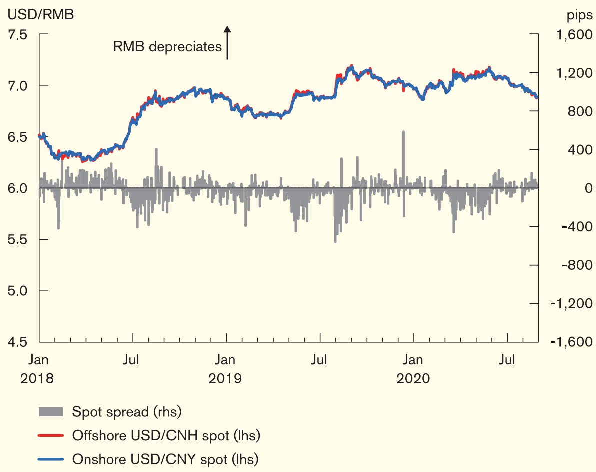
For retail-level interest rates, the composite interest rate, which measures the average Hong Kong dollar funding cost of retail banks, decreased from 1.09% at the end of 2019 to 0.41% at the end of August (Chart 4.9). The decline reflected both the drop in retail banks' wholesale funding costs and the lowered time deposit interest rates offered by major retail banks. The average lending rate for new mortgages also decreased from 2.53% to 1.79% during the first seven months, mainly driven by the fall in the one-month HIBOR. On the other hand, the Best Lending Rates of major retail banks remained unchanged, ranging from 5.00% to 5.50% throughout the review period, despite the cut in the US federal funds target rate in March.

Overall, the Hong Kong dollar money market continued to function in an orderly manner during the review period. The abundant liquidity in the banking system, together with the sizeable EFBNs held by banks (amounting to around HK$1 trillion), provide a strong liquidity backstop for Hong Kong's monetary and financial stability.

Offshore renminbi banking business

Against the backdrop of the COVID-19 outbreak and the US dollar funding stress, both the offshore (CNH) and the onshore (CNY) renminbi faced depreciation pressure from March (Chart 4.10). As the US-China tensions intensified, the CNH and CNY tested the decade low of 7.19 against the US dollar in late May. Thereafter, the renminbi regained some strength, due partly to the weakness of the US dollar and partly to the positive sentiment on Mainland's economic recovery. Despite turbulent economic and financial market conditions, the spread between CNY and CNH remained moderate by historical standards, turning from a discount to a slight premium since late May as renminbi depreciation pressure eased.

Chart 4.10
CNY and CNH exchange rates



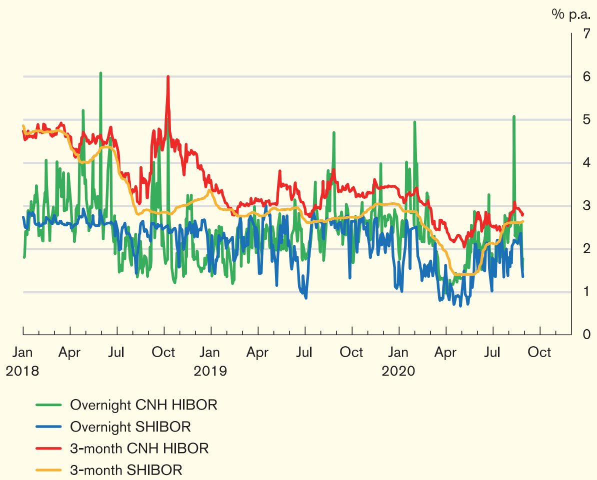
Source: Bloomberg.

Despite the uncertainties arising from the COVID-19 and the escalation of US-China tensions, liquidity conditions in the offshore CNH interbank market remained largely stable. During the review period, the overnight and three-month CNH HIBORs mostly traded below 3% and softened in March and April following the People Bank of China (PBoC)'s monetary easing (Chart 4.11).[33] Moderate fluctuations were

[33] See Chapter 2.2 for a summary of the PBoC's monetary easing measures.

seen in June, in part driven by funding needs for northbound remittances and seasonal liquidity demand near the half-year end.

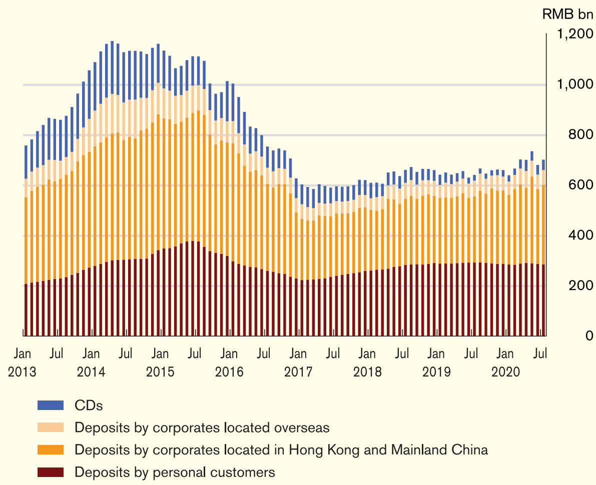
Chart 4.11
The overnight and the three-month CNH HIBOR fixings



Source: CEIC.

Hong Kong's CNH liquidity pool expanded further during the first seven months of 2020. The total outstanding amount of renminbi customer deposits and certificates of deposit (CDs) grew moderately by 6.2% to RMB699.2 billion at the end of July (Chart 4.12 and Table 4.A). Renminbi customer deposits witnessed a 4.1% increase, driven by a moderate increase in deposits by corporate customers. Personal customer deposits, however, decreased slightly, partly reflecting residents' northbound renminbi transfers for investment in the onshore market. On the other hand, outstanding CDs picked up strongly by 58.2% along with the rise in renminbi CD issuance during the first half.

Chart 4.12
Renminbi deposits and CDs in Hong Kong



Source: HKMA.

Table 4.A
Offshore renminbi banking statistics

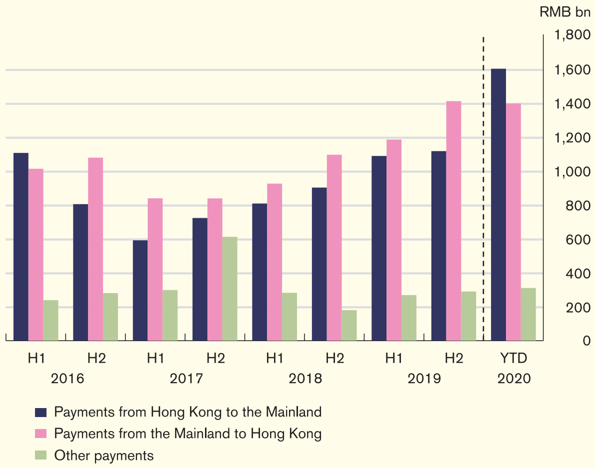
	Dec 2019	Jul 2020
Renminbi deposits & CDs (RMB bn)	658.0	699.2
Of which:		
Renminbi deposits (RMB bn)	632.2	658.3
Share of renminbi deposits in total deposits (%)	5.1	5.0
Renminbi CDs (RMB bn)	25.8	40.9
Renminbi outstanding loans (RMB bn)	153.7	162.0
Number of participating banks in Hong Kong's renminbi clearing platform	204	206
Amount due to overseas banks (RMB bn)	76.3	98.0
Amount due from overseas banks (RMB bn)	95.4	101.7
	Jan – Jul 2020	
Renminbi trade settlement in Hong Kong (RMB bn)	3,724.4	
Of which:		
Inward remittances to Hong Kong (RMB bn)	1,602.1	
Outward remittances to Mainland China (RMB bn)	1,768.3	
Turnover in Hong Kong's RMB real time gross settlement (RTGS) system (Daily average during the period; RMB bn)	1,201.1	

Source: HKMA.

Renminbi bank lending in Hong Kong continued to maintain steady growth. During the first seven months of 2020, the outstanding amount of renminbi loans rose by 5.4% to RMB162.0 billion. Hong Kong's renminbi trade settlement also continued to expand. Transactions handled by banks in Hong Kong amounted to RMB3,724.4 billion during the first seven months of 2020, picking up by 23.9% compared with the same period last year. The increase was mainly driven by a rise in outward remittances to Mainland China (Chart 4.13). Overall, the renminbi liquidity pool in Hong

Kong continued to provide adequate support to a large amount of renminbi payments and financing intermediation activities. During the first seven months, the average daily turnover of the renminbi Real Time Gross Settlement (RTGS) system stayed high at RMB1,201.1 billion, compared with RMB1,121.3 billion in the same period in 2019.

Chart 4.13
Flows of renminbi trade settlement payments



Source: HKMA.

Looking ahead, the development of Hong Kong's offshore renminbi business will continue to be affected by the changing macro-financial and geopolitical environment. Although the outlook remains clouded by the uncertainties arising from the COVID-19 outbreak as well as the US-China tensions, Hong Kong's offshore renminbi business is expected to gain momentum along with the ongoing liberalisation of Mainland's capital account, rising demand for renminbi assets from international investors, and more regional economic and financial co-operation under the Belt and Road and the Guangdong-Hong Kong-Macao Greater Bay Area initiatives[34].

[34] On 29 June, the PBoC, the HKMA and the Monetary Authority of Macao jointly announced the launch of a cross-boundary wealth management connect pilot scheme (Wealth Management Connect) in the Guangdong-Hong Kong-Macao Greater Bay Area, which facilitates cross-boundary investment by individual residents in the Guangdong-Hong Kong-Macao Greater Bay Area.

Asset markets

In line with global stock markets, the Hong Kong equity market was initially driven down by the COVID-19 outbreak, and then recovered amid optimism that global policy responses to the pandemic could support an economic recovery, even though the pandemic was still not fully under control. Nevertheless, both the Hong Kong dollar debt market and the offshore renminbi debt market in Hong Kong expanded marginally in the first half of 2020. With COVID-19 lingering in the background, activities in the residential property market moderated again in July and August after picking up in the second quarter.

4.3 Equity market

The Hong Kong equity market took a roller coaster ride in the review period. The Hang Sang Index (HSI) dropped sharply in the first quarter of 2020 amid the COVID-19 outbreak and the economic uncertainties surrounding it. The lockdown of economic activities, coupled with the fear of a widespread recession worldwide, wreaked havoc on the global economy. The Hong Kong stock market, as with other global equity markets, plummeted under heavy selling pressure. At one stage in late March, the Hong Kong market hit its lowest level in more than three years.

Spurred by the optimism that economic activities may be recovering amid global policy supports, the local stock market rebounded quickly in tandem with other major equity markets. Proactive moves by leading central banks, including unlimited asset purchase schemes, have flooded financial markets with massive liquidity support. These actions by central banks, together with significant fiscal stimuli by government authorities globally, signalled policymakers' determination to combat the unprecedented global recession.

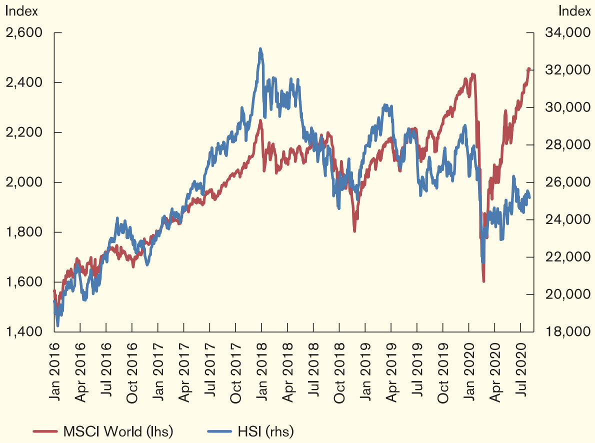
Against this backdrop, despite that the pandemic has yet to be brought under control, most global equities recouped their losses in the second quarter, with the MSCI World Index reaching a record high by the end of the review period. Nevertheless, the HSI, while witnessing rebound from its year-low in March, underperformed when compared with other major equity markets.

During the review period, there was much "noise" stemming from the geopolitical front, including the re-emergence of tensions on the Korean Peninsula, the rising tension between the US and Mainland China and its potential implications for Hong Kong. However, the impact on the local equity market has so far been short-lived.

Overall, the HSI declined by 4.2% from March 2020 to Aug 2020, while the MSCI World Index edged up by 11.0% in the same period (Chart 4.14). Option-implied volatilities initially surged to a peak in mid-March, and have retreated somewhat since then. However, it was still higher than its historical average, as the market may see further uncertainty ahead. The rebound of the SKEW index towards the end of the review period reflected that investors were once again concerned with a heightened tail risk,

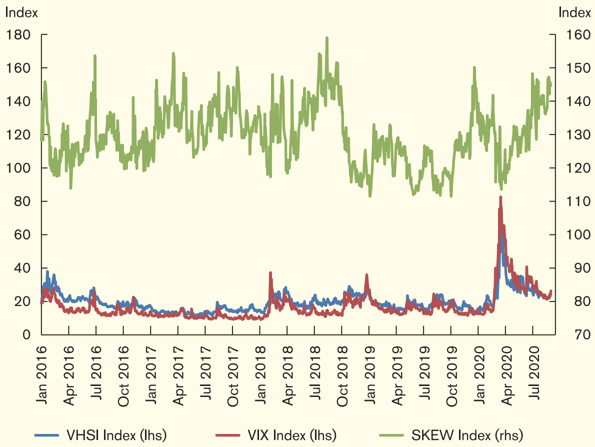
hence they were willing to pay more for downside protection (Chart 4.15).[35]

Chart 4.14
Equity prices and the MSCI World Index



Source: Bloomberg.

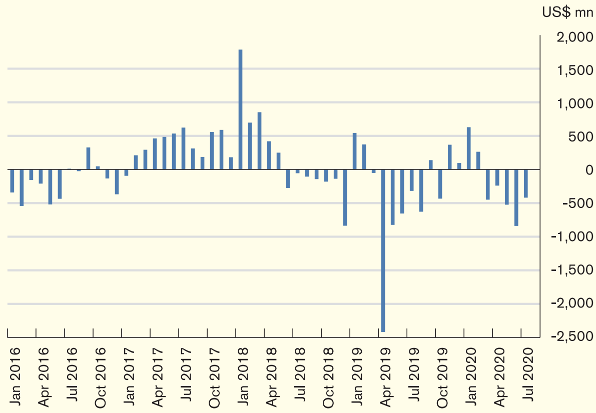
Chart 4.15
Option-implied volatilities of the HSI and S&P500, and the SKEW index



Source: Bloomberg.

With the uncertainties built up around the outbreak of the COVID-19, as well as risks of heightening tensions between the US and Mainland China, investors' appetite for Hong Kong stocks has been dampened. Against this backdrop, international investors have been cautious, as reflected by a mild net outflow in the Hong Kong equity funds during the review period (Chart 4.16).

Chart 4.16
Equity market fund flows into Hong Kong

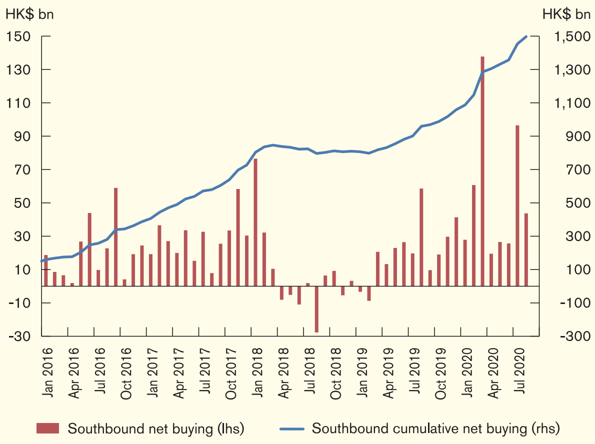


Source: EPFR Global.

Nevertheless, the Hong Kong stock market registered substantial inflows from Mainland investors. The cumulative southbound net buying through the Shanghai-Hong Kong Stock Connect and the Shenzhen-Hong Kong Stock Connect since their introduction got a boost and stood at HK$1,497.3 billion at the end of August, a 56% increase over a year earlier (Chart 4.17).

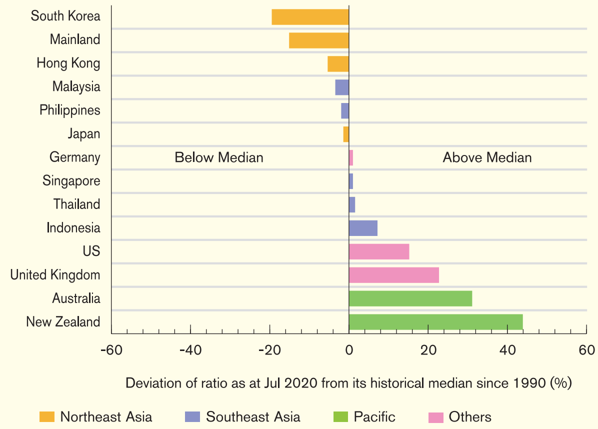
[35] The SKEW Index is calculated by the Chicago Board Options Exchange from the prices of the S&P 500 out-of-the-money options. A SKEW value of 100 means that the probability of outlier negative returns at a 30-day horizon is negligible. As SKEW rises above 100, the left tail of the S&P500 returns distribution acquires more weight, suggesting that the probability of outlier negative returns become more significant. For details, see https://www.cboe.com/products/vix-index-volatility/volatility-indicators/skew.

Chart 4.17
Net flows through Stock Connects



Note: The southbound net buying represents the sum of the southbound net buying from the Shanghai-Hong Kong Stock Connect and that of the Shenzhen-Hong Kong Stock Connect.
Sources: CEIC, HKEX and HKMA staff estimates.

Chart 4.18
Cyclically-adjusted price-earnings ratios of Asia Pacific and other major markets



Sources: Bloomberg, CEIC and HKMA staff estimates.

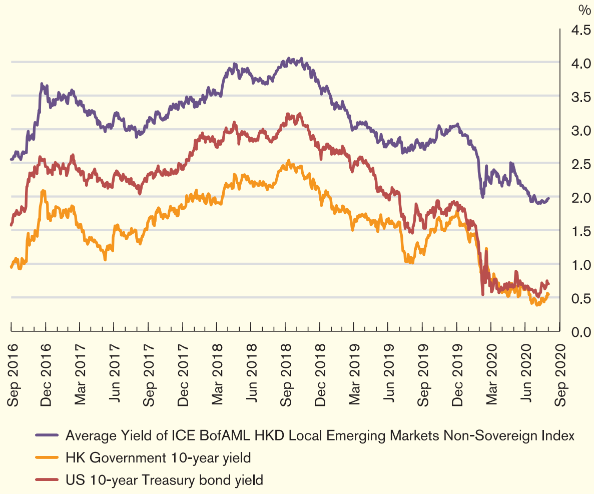
The primary market in Hong Kong recorded significant growth. Funds raised through IPOs in the first half of 2020 increased by 22% year on year, with a total of 64 new listings and total proceeds reaching HK$87.5 billion. More Mainland information technology (IT) firms have sought a secondary listing in Hong Kong, with two large-scale US listed Mainland companies raising a total value of over HK$54.3 billion.

Looking ahead, the local equity market remains highly sensitive to both local and external market conditions, particularly the surging risk of the spread of COVID-19, the uncertainty over the pace of worldwide economic recovery, and whether central banks and government authorities globally still have sufficient policy spaces to respond to future shocks. In addition, geopolitical risks, such as the deterioration in the US-China relationship, will further weigh on the market sentiment of stock investors in Hong Kong. As such, while the local equity market remains relatively attractive in terms of valuation, it is likely to head for more volatility in the near future (Chart 4.18).

4.4 Debt market

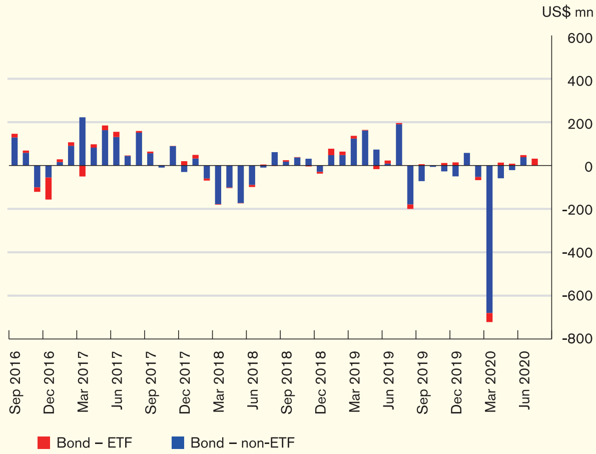
The Hong Kong dollar debt market expanded mildly in the first half of 2020 on the back of steady growth in issuance, with yields of both Hong Kong dollar sovereign and non-sovereign bonds falling sharply to a record low in early March amid massive monetary easing by leading central banks. The decline in Hong Kong dollar bond yields in the first quarter was in tandem with the decrease in US Treasury yields and sharp falls in bond yields in developed economies. These yields, however, have been hovering around low levels since March. Market optimism that economic activities may be recovering with the unprecedented global government policy supports, lured investors back to bonds and other risky assets after the first quarter, despite the spread of the pandemic has yet been fully under control (Chart 4.19).

Chart 4.19
Hong Kong dollar sovereign and non-sovereign bond yields and US ten-year Treasury yield



Sources: ICE Data Indices and HKMA.

Chart 4.20
Exchange traded fund (ETF) and non-ETF bond fund flows into Hong Kong

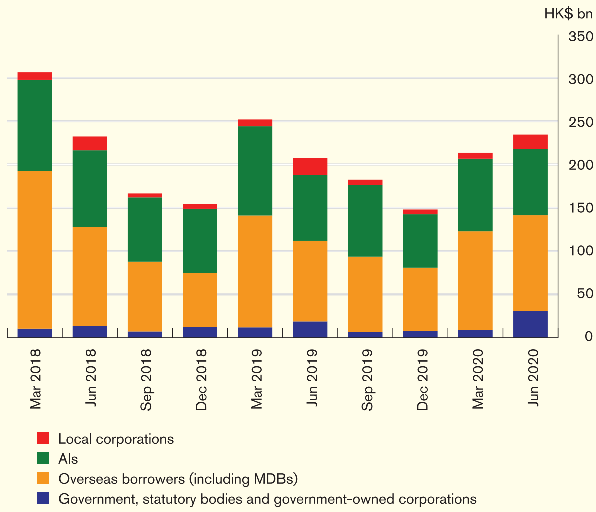


Source: EPFR Global.

The COVID-19 outbreak in Europe in late February and the US in mid-March triggered widespread outflows of bond funds globally as fear of the pandemic then drove investors to hold more cash. Hong Kong was no exception, with bond funds reaching the highest monthly net redemptions on record at US$722 million in March 2020. The fund redemptions were primarily driven by non-exchange traded fund bond funds. Since then, outflows of bond funds from Hong Kong and other emerging markets have stabilised somewhat as the global economic outlook slightly improved with the unprecedented stimulus measures by leading central banks and governments (Chart 4.20).

The total issuance of Hong Kong dollar debt in the first six months of 2020 decreased by 3.2% year on year to HK$2,031.3 billion, mainly driven by a 3.3% decrease in the issuance of the Exchange Fund papers, which more than offset the increase in debt issued by the government sector and overseas borrowers (Chart 4.21).

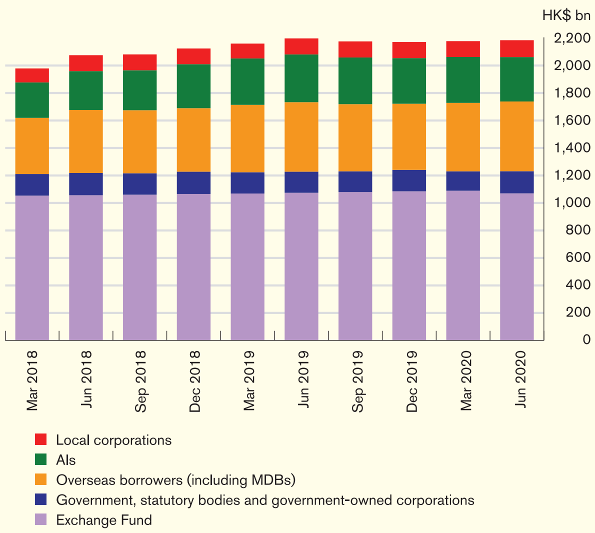
Chart 4.21
New issuance of non-EFBNs Hong Kong dollar debt



Source: HKMA.

The outstanding amount of Hong Kong dollar debt shrank marginally by 0.6% year on year to HK$2,179.0 billion at the end of June 2020 (Chart 4.22). The amount was equivalent to 28.5% of HK$M3 or 23.2% of Hong Kong dollar-denominated assets of the banking sector. Within the total, the local private sector saw its debt outstanding decline by 4.1% from a year ago to HK$444.5 billion, due mainly to a decrease in the outstanding debt of AIs. The outstanding debt of the Exchange Fund papers also decreased by 0.3% year on year to HK$1,067.7 billion.

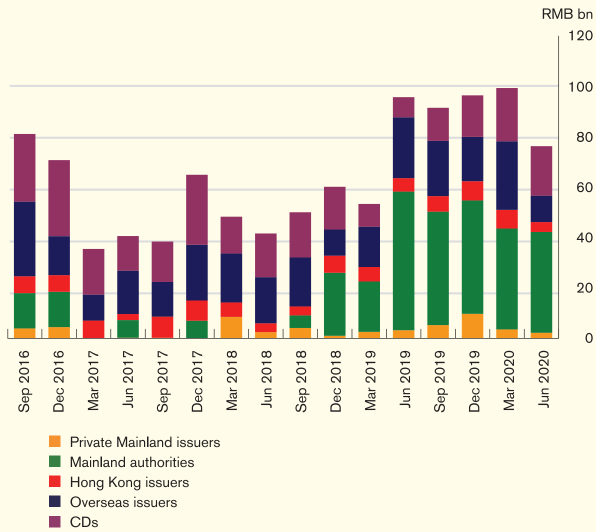
Chart 4.22
Outstanding Hong Kong dollar debt



Source: HKMA.

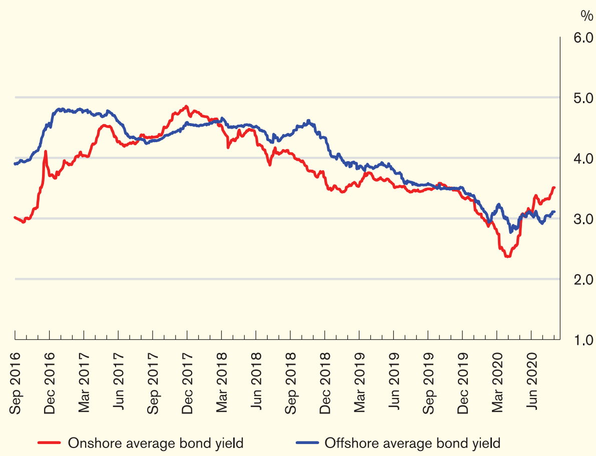
The offshore renminbi debt market in Hong Kong, however, continued to expand steadily. New issuance jumped by 17.8% year on year to RMB175.5 billion in the first half of 2020. This increase was mainly driven by a 139% increase in the issuance of CDs, with local financial institutions being the major contributors. The increase in CD issuance more than offset the 5.4% decrease in debt issued by the overseas issuers and private Mainland issuers (Chart 4.23). As the onshore renminbi debt market was strongly supported by monetary measures of the PBoC to lower borrowing costs for corporates, the gap between onshore and offshore funding costs widened to a high of 68 basis points in early April. The yield difference, however, has reversed towards the end of the review period, as the average funding cost became higher in the onshore market (Chart 4.24).

Chart 4.23
New issuance of offshore renminbi debt in Hong Kong



Sources: Newswires and HKMA staff estimates.

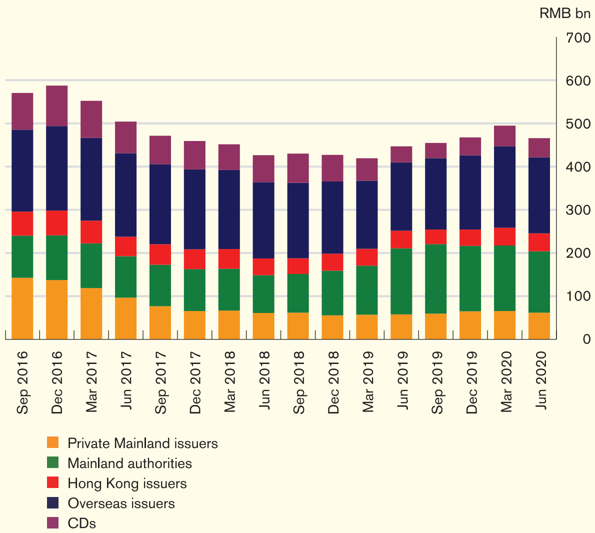
Chart 4.24
Average yields of onshore vs. offshore renminbi bond indices



Sources: Bloomberg, Hang Seng Indexes Company Ltd, and China Central Depository & Clearing Co., Ltd.

Due to the growth in new issuance, the total outstanding amount of offshore renminbi debt securities recorded a 4% year-on-year increase to RMB465.7 billion at the end of June 2020 (Chart 4.25).

Chart 4.25
Outstanding amount of offshore renminbi debt in Hong Kong



Sources: Newswires and HKMA staff estimates.

The near-term prospect for the local debt market, including the offshore renminbi debt market, remains challenging due to the jitters across global markets dominated by the fear of new waves of COVID-19 infections, the global economic slowdown, and a deterioration in the US-China relationship. In the past few months, global economic activities in both the service and manufacturing sectors were almost at a standstill amid the pandemic, and there is no clear sign of a full recovery in the near future. Corporates will be more cautious in launching new investment and engaging in long-term projects, hence dampening their demand for long-term funds. On the other hand, while accommodative fiscal and monetary policy responses to the pandemic have restored some stability and liquidity to bond markets, bond investors may become more prudent in view of the rising credit risk amid heightened economic uncertainty.

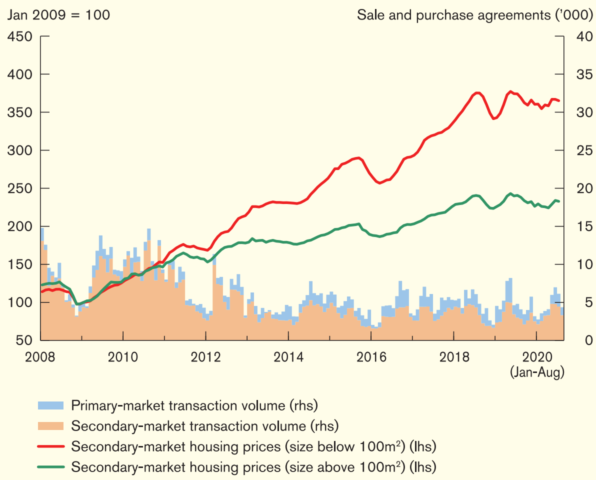
4.5 Property markets

Residential property market

After a quiet first quarter, the residential property market picked up in the second quarter, partly supported by a low interest rate environment and a temporary stabilisation of the local COVID-19 situation. In particular, more property developers resumed or launched new project sales when the restrictions on public gatherings were gradually relaxed in May. Potential buyers also resumed their flat-viewing activities in the secondary market. As a result, the overall housing transactions increased by 67% in the second quarter compared with the first quarter (Chart 4.26). Thereafter, market activities slowed again amid the rise in local COVID-19 infections. The average monthly transactions in July – August eased to around 5,250 units.

The secondary-market housing prices picked up by around 2.2% in March – June after falling by 4.7% from the peak in May 2019. In particular, prices of large flats (with a saleable area of at least 100m²) increased faster than the prices of small and medium-sized flats (with a saleable area of less than 100m²). More recent market data indicated that housing prices eased in July and August.

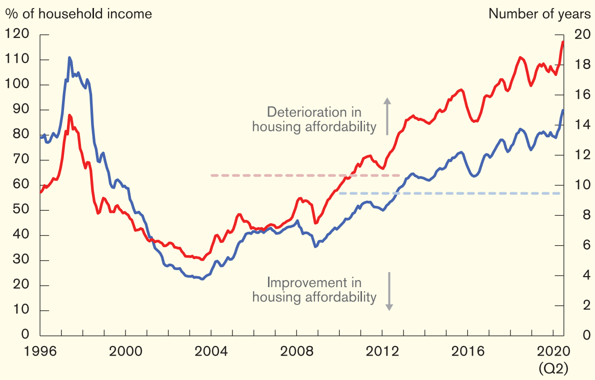
Chart 4.26
Residential property prices and transaction volume



Sources: R&VD and Land Registry.

Housing affordability became more stretched in the first half of the year along with a pick-up in housing prices and easing household income. The housing price-to-income ratio climbed to 18.8 in the second quarter, compared with the 1997 peak of 14.6. The income-gearing ratio also reached 86.6%, well above the long-term average (Chart 4.27).[36] In addition, as housing rentals declined, the buy-rent gap also climbed in the first half of the year (Chart 4.28).[37] In tandem, residential rental yields softened to a low range of 1.8–2.4% in July.

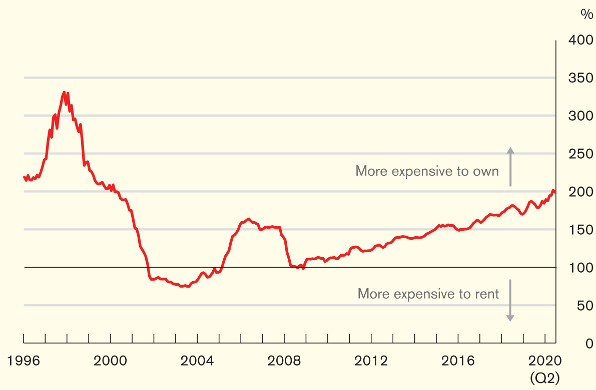
Chart 4.27
Indicators of housing affordability



Income-gearing ratio (lhs)
Long term average of income-gearing ratio (lhs)
Price-to-income ratio (rhs)
Long term average of price-to-income ratio (rhs)

Sources: R&VD, C&SD and HKMA staff estimates.

Chart 4.28
Buy-rent gap



Note: This indicator is calculated as the ratio of the cost of purchasing and maintaining a 50m² flat with that of renting it.
Sources: R&VD, C&SD and HKMA staff estimates.

The average interest rates for new mortgages fell to a low of about 1.8% in July, mainly reflecting the decline in HIBORs in recent months (see also section 4.2). Several banks have tightened their mortgage offers by cutting the cash rebates for new mortgages, but a few of them reintroduced the rebates in late August because of keen market competition.

While the pandemic and the deepening economic recession pose downside risks to the housing market, the macroprudential measures implemented by the HKMA since 2009 have strengthened banks' resilience to property market shocks. The debt-servicing ratio for new mortgages was stable at a low level of about 36% in January–July. The average LTV ratio for new mortgages was 58% in July, which is still below the 64% level before the measures were first introduced.

The outlook for the residential property market is subject to a number of uncertainties and risks as discussed in previous chapters. The lingering COVID-19 outbreak, coupled with the deep economic recession and the rising unemployment rate, will weigh on housing demand. Other external risk and uncertainty factors, such as the intensified US-China tensions, may also affect residential property market sentiment. However, the prolonged

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[36] The price-to-income ratio measures the average price of a typical 50m² flat relative to the median income of households living in private housing. Alternatively, the income-gearing ratio compares the amount of mortgage payment for a typical 50m² flat (under a 20-year mortgage scheme with a 70% loan-to-value (LTV) ratio) to the median income of households living in private housing. The income-gearing ratio is not the same as a borrower's actual debt-servicing ratio, which is subject to a maximum cap by the HKMA prudential measures.

[37] The buy-rent gap estimates the cost of owner-occupied housing (under a 20-year mortgage scheme with a 70% LTV ratio) relative to rentals.

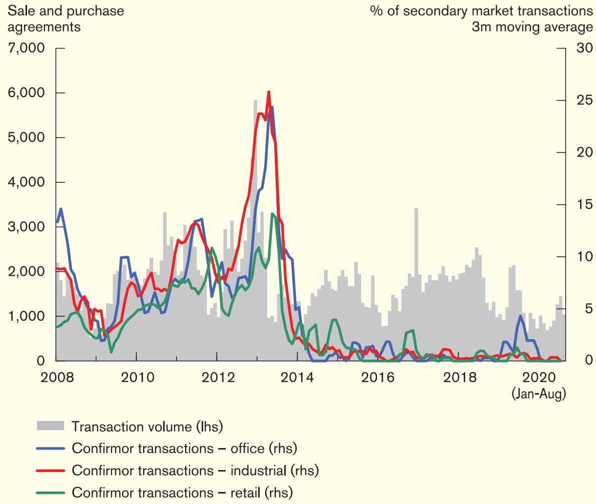
ultra-low interest rates will continue to be a supporting factor for asset prices. Over the longer term, the outlook for the housing market will depend on the housing supply-demand gap. According to the latest completion figures, the private housing supply has not been disrupted by the pandemic. More than 11,000 units were completed by end-July, which met more than a half of the Government's projection for 2020.

Non-residential property market

Reflecting the decline in economic activities, the non-residential property market saw a further moderation in the first half of 2020. The average monthly transaction volume fell to a record low of 912 units between January and June (Chart 4.29). Speculative activities remained inactive as indicated by confirmor transactions. On the price front, prices of commercial and industrial properties exhibited differential movements within the first half of the year. In particular, prices of office space declined further, while prices of retail premises picked up slightly after a sharp fall in the second half of 2019 (Chart 4.30). The commercial leasing market stayed lacklustre. Rentals of office space and retail premises remained soft, partly because landlords were willing to cut rents in response to increased vacancy rates (Chart 4.31). Rental yields across segments remained low at 2.6–2.9%.

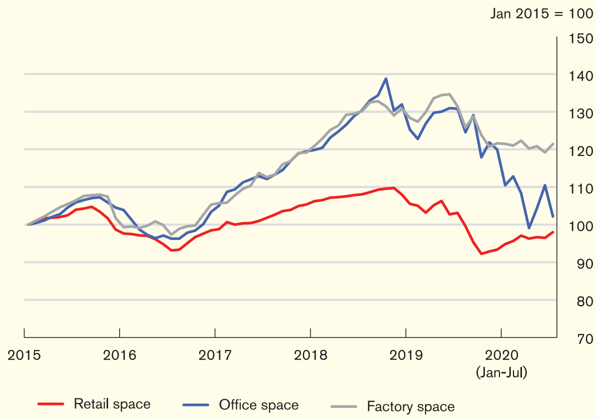
The outlook for the non-residential property market remains challenging in the near term. Should the pandemic linger on, the local economy might deteriorate further and inbound tourism will remain in the doldrums, thereby dampening rental earnings and capital values of office space and retail premises. Other factors such as the intensified US-China tensions might also add uncertainties to the business environment, which could in turn weigh on business confidence and dampen the demand for commercial and industrial properties.

Chart 4.29
Transactions in non-residential properties



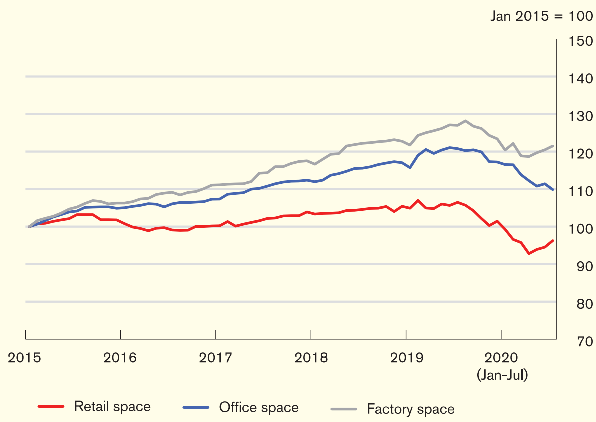
Sources: Land Registry and Centaline Property Agency Limited.

Chart 4.30
Non-residential property price indices



Source: R&VD.

Chart 4.31
Non-residential property rental indices



Source: R&VD.

Given that the non-residential property markets have seen major corrections since last year and will likely remain under pressure, and taking into account other factors such as economic fundamentals and the external environment, the HKMA considers it appropriate to adjust the countercyclical macroprudential measures on non-residential properties. Effective from 20 August 2020, the applicable loan-to-value ratio caps for mortgage loans on non-residential properties are adjusted upward by 10 percentage points.[38]

[38] For more details, see the circular "Prudential Measures for Mortgage Loans on Non-residential Properties" issued by the HKMA on 19 August 2020.

5. Banking sector performance

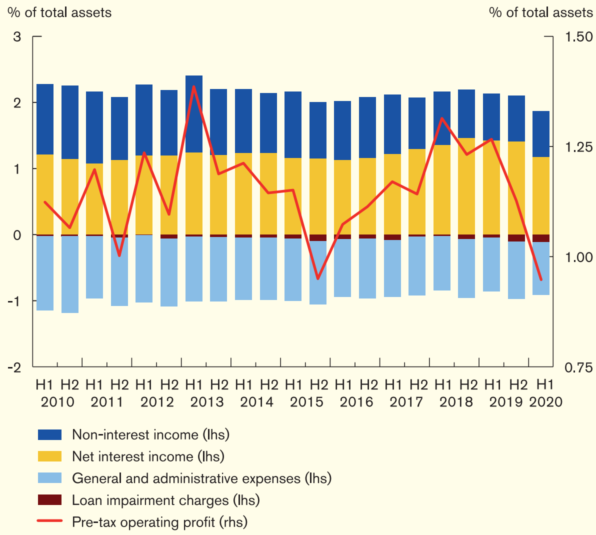
As the economic downturn deepened amid the global outbreak of COVID-19, retail banks in Hong Kong recorded thinner profits alongside a slight deterioration in asset quality in the first half of 2020. Nevertheless, the Hong Kong banking sector has remained resilient, underpinned by strong capital and liquidity positions by international standards. In response to the pandemic, the HKMA, together with the banking sector, has taken proactive measures to reduce cash-flow pressure on borrowers. These measures supported stable flows of credit to help the economy ride out this difficult period. Looking ahead, the Hong Kong banking sector will continue to be challenged by a number of downside risk factors, including uncertainties over the path of global and domestic economic recovery amid the COVID-19 pandemic and rising US-China tensions. As these risk factors may continue to linger, banks should carefully assess the longer-term impact on the asset quality of their loan portfolios, particularly as the recession may weaken corporates' and households' repayment ability.

5.1 Profitability and capitalisation

Profitability

Due to the deterioration in the global economic environment amid the COVID-19 pandemic, the banking sector recorded thinner profits in the first half of 2020. The aggregate pre-tax operating profit of retail banks[39] declined by 20.0% in the first half of 2020, compared with the same period in 2019. The reduction in profits was mainly driven by a decrease in net interest income and an increase in loan impairment charges, which more than offset the mild increase in non-interest income. As a result, the return on assets dropped to a recent low of 0.95% in the first half of 2020, compared with 1.27% in the same period in 2019 (Chart 5.1).

Chart 5.1
Profitability of retail banks



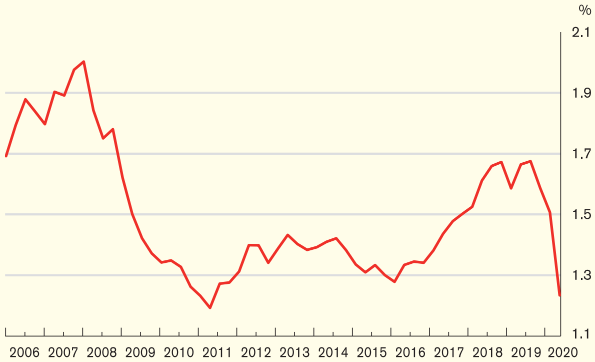
Note: Semi-annually annualised figures.
Source: HKMA.

The net interest margin (NIM) of retail banks narrowed by 26 basis points to 1.37% in the first half of 2020 from 1.62% in the same period of 2019 (Chart 5.2). This was partly contributed by a notable decrease in Hong Kong interbank offered rates (HIBORs) in the second quarter

39 Throughout this chapter, figures for the banking sector relate to Hong Kong offices only unless otherwise stated.

(detailed below), which compressed banks' margin on HIBOR-based assets.[40]

Chart 5.2
NIM of retail banks

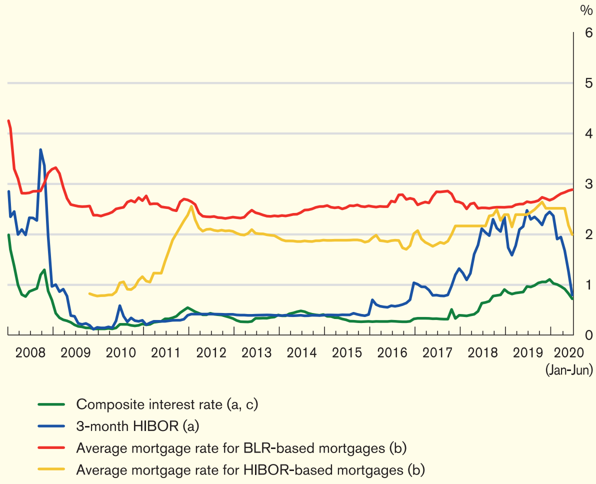


Note: Quarterly annualised figures.
Source: HKMA.

As the US Federal Reserves slashed the policy interest rate by a total of 150 basis points to near zero in March, in an attempt to cushion the adverse effect of the COVID-19 pandemic, Hong Kong interbank interest rates also saw a notable decline in the second quarter alongside significant capital inflows.[41] In particular, the three-month HIBOR saw a marked reduction of 115 basis points in the second quarter to 0.78% at the end of June 2020 after the decline of 50 basis points in the first quarter (blue line in Chart 5.3).

The composite interest rate (a measure of the average Hong Kong dollar funding costs for retail banks) also showed a similar development. After a decrease from 1.09% at the end of 2019 to 0.95% at the end of March 2020, it declined more notably to 0.71% at the end of June 2020 (green line in Chart 5.3), reflecting lower interbank funding cost and lower time deposit rates offered by some major retail banks.

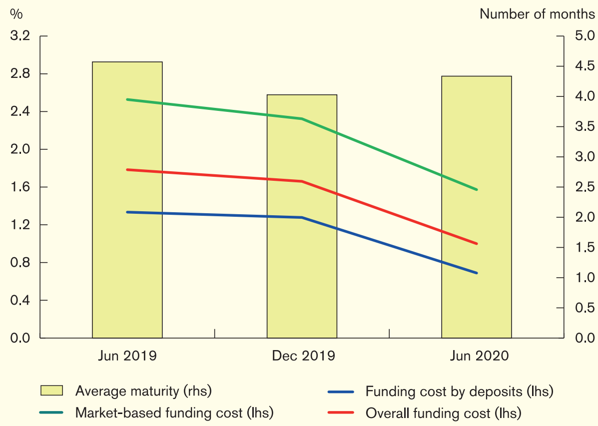
Chart 5.3
Interest rates



Notes:
(a) End of period figures.
(b) Period-average figures for newly approved loans.
(c) Since June 2019, the composite interest rate has been calculated based on the new local "Interest rate risk in the banking book" (IRRBB) framework. As such, the figures from June 2019 onwards are not strictly comparable with those of previous months.
Sources: HKMA and staff estimates.

From a broader perspective, the overall Hong Kong dollar and US dollar funding cost for licensed banks in Hong Kong declined moderately by 66 basis points during the first half of 2020 (Chart 5.4).

Chart 5.4
Hong Kong dollar and US dollar funding cost and maturity of licensed banks



Note: Since June 2019, licensed banks not exempted from the new local IRRBB framework report under the new framework, while exempted licensed banks continue to report under the existing interest rate risk exposure framework. The overall funding cost and the maturity have been calculated as the weighted averages of the respective figures for these two groups of licensed banks. As such, figures from June 2019 onwards are not directly comparable with those of previous periods.
Source: HKMA.

[40] In response, some retail banks have raised mortgage rates and cut cash rebates since late-June, according to market information.

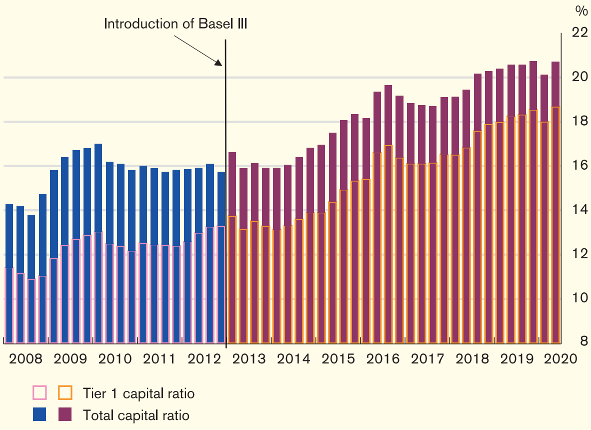
[41] The strong-side Convertibility Undertaking has been repeatedly triggered since late April this year. For details, please see Chapter 4.1.

In the near term, the outlook for banks' profitability may become more challenging as the low interest rate environment is likely to be prolonged, continuing to suppress banks' NIM. At the same time, a deterioration in asset quality will weigh on banks' profit given that various factors could deepen the economic downturn in Hong Kong, including new waves of the pandemic and the rising US-China tensions.

Capitalisation

Capitalisation of the Hong Kong banking sector continued to be strong and well above minimum international standards. The consolidated total capital ratio of locally incorporated authorized institutions (AIs) stayed largely unchanged at around 20.7% at the end of June 2020 compared with six months ago (Chart 5.5). The Tier 1 capital ratio edged up to 18.7%, with 16.6% being contributed by Common Equity Tier 1 (CET1) capital.

Chart 5.5
Capitalisation of locally incorporated AIs

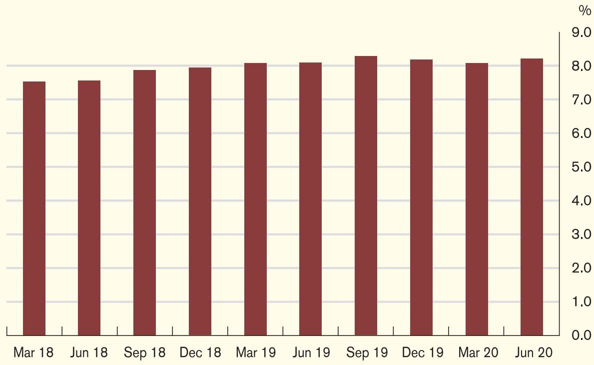


Notes:
1. Consolidated basis.
2. With effect from 1 January 2013, a revised capital adequacy framework (under Basel III) was introduced for locally incorporated AIs. The capital ratios from March 2013 onwards are therefore not directly comparable with those up to December 2012.

Source: HKMA.

Alongside the risk-based capital adequacy ratio, there is a Basel III non-risk-based Leverage Ratio (LR) requirement acting as a "back-stop" to restrict the build-up of excessive leverage in the banking sector.[42] The LR of locally incorporated AIs stood at a healthy level of 8.2% at the end of June 2020, exceeding the 3% statutory minimum (Chart 5.6).

Chart 5.6
Leverage Ratio of locally incorporated AIs



Note: Consolidated basis.
Source: HKMA.

5.2 *Liquidity and interest rate risks*

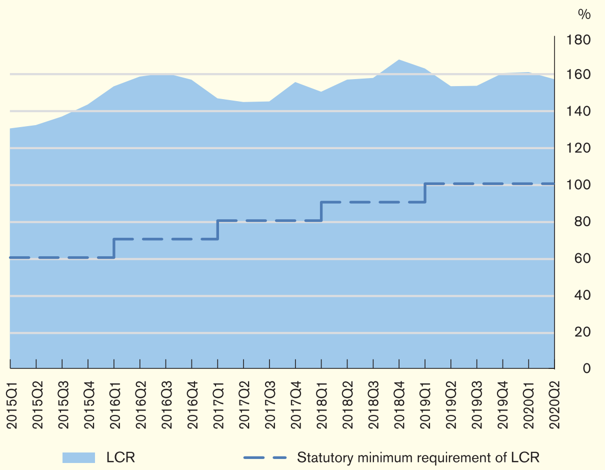
Liquidity and funding

The liquidity positions of the banking sector, as measured by the Basel III Liquidity Coverage Ratio (LCR)[43], remained sound during the review period. The average LCR of category 1 institutions hovered at a similar level of 156.5% in the second quarter of 2020 from 159.9% in the fourth quarter of 2019 (Chart 5.7), which were well above the statutory minimum requirement of 100%. The average Liquidity Maintenance Ratio (LMR) of category 2 institutions mildly increased to 57.2% in the second quarter of 2020 from 56.4% in the fourth quarter of 2019, also well above the statutory minimum requirement of 25%.

[42] LR is calculated as the ratio of Tier 1 capital to an exposure measure, where the exposure measure includes both on-balance sheet and off-balance sheet exposures. For details, please refer to the Basel III leverage ratio framework published by the Basel Committee on Banking Supervision (https://www.bis.org/basel_framework/standard/LEV.htm).

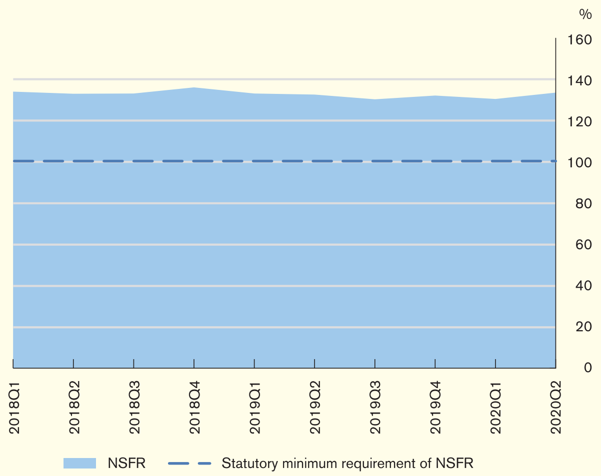
[43] The Basel III LCR requirement is designed to ensure that banks have sufficient high quality liquid assets to survive a significant stress scenario lasting 30 calendar days. In Hong Kong, AIs designated as category 1 institutions adopt the LCR; while category 2 institutions adopt the LMR. For details, see the HKMA's Supervisory Policy Manual (SPM) LM-1, "Regulatory Framework for Supervision of Liquidity Risk".

Chart 5.7
Liquidity Coverage Ratio



Notes:
1. Consolidated basis.
2. Quarterly average figures.
Source: HKMA.

Chart 5.8
Net Stable Funding Ratio

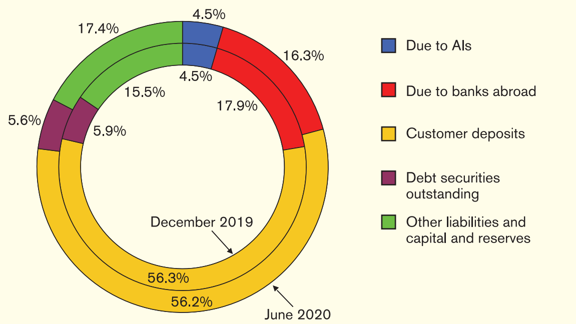


Note: Consolidated basis.
Source: HKMA.

The Net Stable Funding Ratio (NSFR)[44], as part of the Basel III liquidity requirements, indicates a stable funding position of AIs. The average NSFR of category 1 institutions remained at a high level of 133.1% in the second quarter of 2020 (Chart 5.8), well above the statutory minimum requirement of 100%. The average Core Funding Ratio (CFR) of category 2A institutions stood at a high level of 138.1%, exceeding the statutory minimum requirement of 75%. The strong liquidity and stable funding positions of AIs suggest the Hong Kong banking sector is well positioned to withstand liquidity shocks.

Customer deposits continued to be the primary funding source for AIs, underpinning a stable funding structure in the banking system. At the end of June 2020, the share of customer deposits to all AIs' total liabilities hovered around 56.2%, a level similar to six months ago (Chart 5.9).

Chart 5.9
The liability structure of all AIs



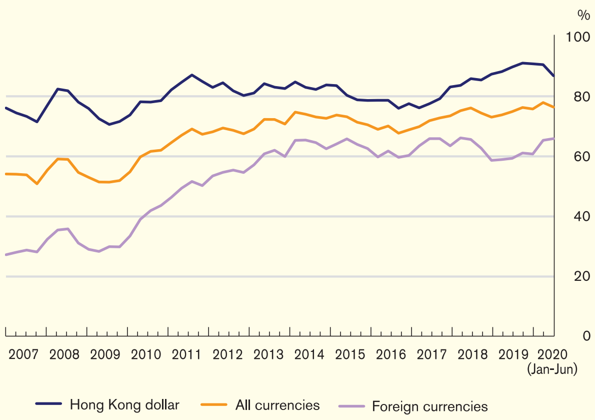
Notes:
1. Figures may not add up to total due to rounding.
2. Figures refer to the percentage of total liabilities (including capital and reserves).
3. Debt securities comprise negotiable certificates of deposit and all other negotiable debt instruments.
Source: HKMA.

[44] In Hong Kong, category 1 institutions are required to comply with the NSFR; while category 2 institutions designated as category 2A institutions must comply with the requirements relating to the local CFR. According to the Banking (Liquidity) Rules, a category 1 institution must at all times maintain an NSFR of not less than 100%. A category 2A institution must maintain a CFR of not less than 75% on average in each calendar month since and after January 2019. For details, see Banking (Liquidity) Rules (Cap. 155Q).

Reflecting an increase in Hong Kong dollar deposits and a slight decrease in loans and advances in the first half of 2020, the average Hong Kong dollar loan-to-deposit (LTD) ratio of all AIs declined to 86.4% at the end of June 2020 from 90.3% at the end of 2019 (Chart 5.10).[45]

By comparison, with strong demand for foreign currency loans (especially US dollar loans) since March, the average foreign currency LTD ratio increased to 65.5% from 60.4% during the same period. Overall, the average all-currency LTD ratio of all AIs edged up to 76.0% at the end of June 2020 from 75.3% six months ago.

Chart 5.10
Average LTD ratios of all AIs

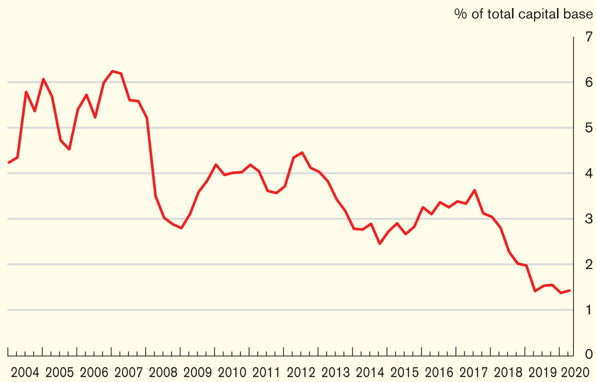


Note: Quarter-end figures.
Source: HKMA.

Interest rate risk

The interest rate risk exposure of locally incorporated licensed banks remained relatively low in the second quarter of 2020. It is estimated that under a hypothetical shock of an across-the-board 200-basis-point increase in Hong Kong dollar and US dollar interest rates, the economic value of locally incorporated licensed banks' interest rate positions could be subject to a decline equivalent to 1.43% of their total capital base at the end of June 2020 (Chart 5.11).[46]

Chart 5.11
Impact of a Hong Kong dollar and US dollar interest rate shock on locally incorporated licensed banks



Notes:
1. Interest rate shock refers to a 200-basis-point parallel increase in both Hong Kong dollar and US dollar yield curves to institutions' interest rate risk exposure. The two currencies accounted for a majority of interest-rate-sensitive assets, liabilities and off-balance-sheet positions for locally incorporated licensed banks' at the end of June 2020.
2. The impact of the interest rate shock refers to its impact on the economic value of the banking and trading book[47], expressed as a percentage of the total capital base of banks.
3. Since June 2019, the interest rate risk exposure has been calculated based on the new local IRRBB framework. As such, the figures for June 2019 onwards are not strictly comparable with those of previous periods.

Source: HKMA.

5.3 Credit risk

Overview

Despite the deepening of the recession in Hong Kong, total loans and advances of the banking sector grew by 3.0% during the first half of 2020, after growing by 2.4% in the second half of 2019. (Chart 5.12). Loan growth was broad-based, with growth in loans for use outside Hong Kong accelerating to 4.2% in the same period from 2.2% in the preceding six months and growth in

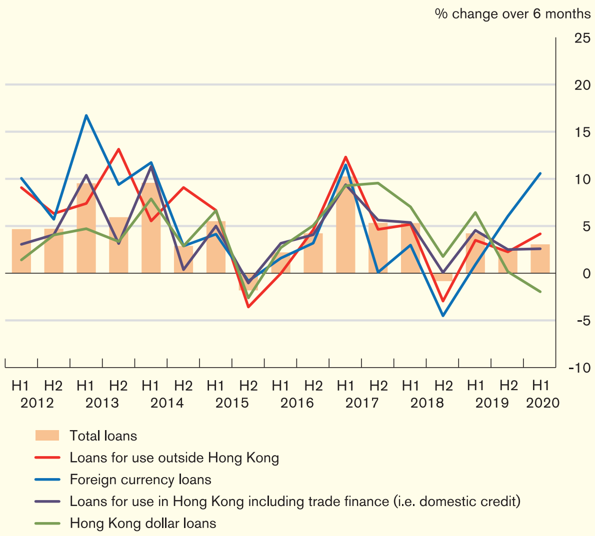
[45] The Hong Kong dollar LTD ratio has stayed at a relatively high level during recent quarters despite the latest easing. Nevertheless, the liquidity conditions of the banking system remained sound if one also takes into account AIs' own capital and reserves as a broader measure of funding liquidity. The adjusted Hong Kong dollar LTD (including customer deposits, capital and reserves, qualifying capital instruments and other capital-type instruments as the denominator) was around 73% at the end of June 2020.

[46] This estimation does not take into account the effect of any mitigating action by banks in response to the shock. The impact will be smaller if mitigating action is taken.

[47] Locally incorporated AIs subject to the market risk capital adequacy regime are required to report positions in the banking book only. Other locally incorporated AIs exempted from the market risk capital adequacy regime are required to report aggregate positions in the banking book and trading book.

domestic loans (comprising loans for use in Hong Kong and trade financing) being broadly stable at 2.6%.

Chart 5.12
Loan growth



Note: Since December 2018, figures for loans for use in/outside Hong Kong have been restated to reflect AIs' reclassification of working capital loans. The reported % changes over six months for 2019 and onwards are calculated based on the reclassified loan data, while the historical % changes until the second half of 2018 are calculated based on the data without such reclassification.
Source: HKMA.

Analysed by currency, Hong Kong dollar loans contracted by 2.0% in the first half of 2020. In contrast, foreign currency loans grew sharply by 10.6%, driven partly by strong demand for US dollar loans, as COVID-19 triggered a sharp global US dollar liquidity stress around mid-March, causing corporates to secure their US dollar funding globally. Moreover, the interest differential between Hong Kong dollar and the US dollar in March and April also made borrowing in US dollar more attractive.

Banks' views of credit demand in the near term were diverse. According to the results of the HKMA Opinion Survey on Credit Condition Outlook in June 2020, the shares of surveyed AIs expecting loan demand to be lower and those expecting loan demand to be higher in the following three months were broadly similar at 24% and 21% respectively. (Table 5.A).

Table 5.A
Expectation of loan demand in the next three months

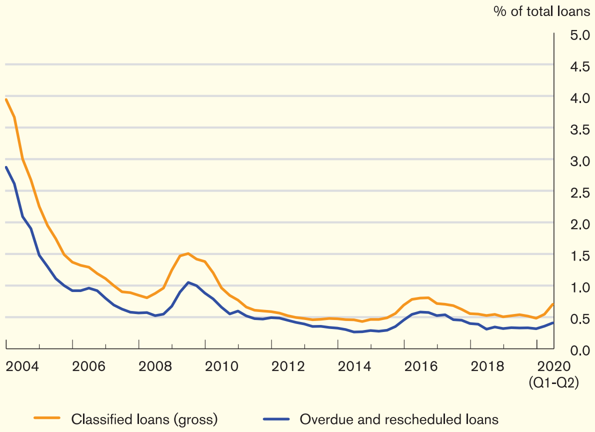
% of total respondents	Sep-19	Dec-19	Mar-20	Jun-20
Considerably higher	0	0	0	0
Somewhat higher	14	18	24	21
Same	41	68	36	55
Somewhat lower	45	14	40	24
Considerably lower	0	0	0	0
Total	100	100	100	100

Note: Figures may not add up to total due to rounding.
Source: HKMA.

The asset quality of banks' loan portfolios showed signs of persistent albeit modest deterioration in the first half amid the COVID-19 outbreak and widespread economic downturn. The gross classified loan ratio (CLR) of all AIs increased to 0.79% at the end of June 2020 from 0.57% at the end of 2019, while the ratio of overdue and rescheduled loans of all AIs also rose from 0.34% at the end of 2019 to 0.49% at the end of June 2020. For retail banks, the gross CLR and the ratio of overdue and rescheduled loans both increased to 0.71% and 0.41% respectively (Chart 5.13).

Due to the negative impact of COVID-19 on borrowers' repayment ability, it is likely the asset quality of banks may deteriorate in the coming quarters and hence a further increase in banks' loan-loss provisions. The HKMA has requested banks to uphold their loan classification standards to reflect any changes in asset quality in a timely manner and to set aside adequate provisions.

Chart 5.13
Asset quality of retail banks



Notes:
1. Classified loans are those loans graded as "sub-standard", "doubtful" or "loss".
2. Figures prior to December 2015 are related to retail banks' Hong Kong offices and overseas branches. Starting from December 2015, the coverage was expanded to include the banks' major overseas subsidiaries as well.

Source: HKMA.

Household exposure[48]

The half-yearly growth in household debt slowed to 1.6% in the first half of 2020 from 5.7% in the second half of 2019, reflecting the decline in personal loans (both credit card advances and loans for other private purposes) and slower growth in residential mortgage loans (Table 5.B).

Table 5.B
Half-yearly growth of loans to households of all AIs

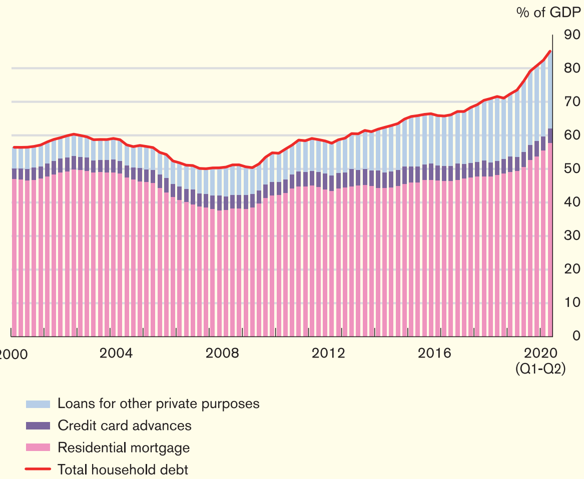
(%)	2017 H1	2017 H2	2018 H1	2018 H2	2019 H1	2019 H2	2020 H1
Residential mortgages	5.0	4.0	4.6	3.2	4.7	5.6	3.5
Personal loans	5.6	12.4	7.1	4.5	11.0	5.8	-2.3
of which:							
Credit card advances	-7.8	11.0	-5.0	10.6	-3.8	4.1	-9.0
Loans for other private purposes	9.9	12.7	10.3	3.2	14.7	6.2	-1.0
Total loans to households	5.2	6.5	5.4	3.6	6.8	5.7	1.6

Notes:
1. Since December 2018, figures for loans to households have been restated to reflect AIs' reclassification of working capital loans. The half-yearly growth rates for the first half of 2019 and onwards are calculated based on the reclassified loan data, while the historical growth rates until the second half of 2018 are calculated based on the data without such reclassification.
2. The data series of loans to households from 2017 have been revised due to classification issues of the data submitted by AIs earlier.

Source: HKMA.

Despite slower growth of household debt in the first half of 2020, the household debt-to-GDP ratio rose further to 85.1% in the first half of 2020 from 80.8% in the second half of 2019, as the nominal GDP declined amid the contraction of Hong Kong economy (Chart 5.14). Given the nature of the current downturn, economic activities contracted sharply at a much quicker pace than the paydown of outstanding household debt, boosting the household debt-to-GDP ratio. Indeed, the contraction in nominal GDP has contributed 3.0 of the 4.3 percentage points increase in the ratio from the second half of 2019. It is worth noting that while economic activities could slow down sharply during recessions, it may not be necessary for households to repay their debt within a short period of time. As such, the adjustment of household debt is usually slower than that of GDP during an economic downturn. Thus, a high level of household debt-to-GDP ratio will likely remain in the near term. The trends of the ratio would depend on future economic development.

Chart 5.14
Household debt-to-GDP and its components



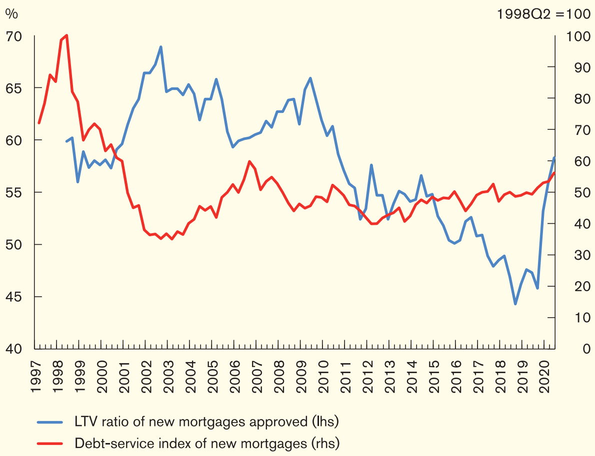
Notes:
1. Only borrowings from AIs are covered.
2. GDP refers to the annualised GDP, which is the sum of the quarterly GDP in the trailing four quarters.
3. Since December 2018, the figure for household debt has been restated to reflect AIs' reclassification of working capital loans.
4. The data series of loans to households from 2017 have been revised due to classification issues of the data submitted by AIs earlier.

Source: HKMA.

48 Loans to households constitute lending to professional and private individuals, excluding lending for other business purposes. Mortgage lending accounts for a major proportion of household loans, while the remainder comprises mainly loans to private banking and wealth management customers secured by financial assets, credit card advances and unsecured personal loans. At the end of June 2020, the share of household lending in domestic lending was 31.6%.

Within household debt, although residential mortgage loans continued to rise in the first half of 2020, they witnessed a slowdown in growth compared to last year. Banks' mortgage portfolios remained healthy, with the delinquency ratio hovering at a low level of 0.04% in the second quarter of 2020. The loan-to-value (LTV) ratio of new mortgage loans approved continued to trend up from 53.2% in December 2019 to 58.3% in June 2020 (Chart 5.15), partly reflecting that more mortgages were granted under the Mortgage Insurance Programme. Nonetheless, the figure was still well below the ratio of 64% in September 2009, before the HKMA's countercyclical macro-prudential measures were introduced. In addition, the average debt servicing ratio (DSR) of new mortgages approved also decreased to 36.2% in June 2020 from 41% in August 2010, when a cap on DSR was first applied.

Chart 5.15
LTV ratio and household debt-servicing burden for new mortgage loans



Notes:
1. The calculation of the debt-service index is based on the average interest rate for BLR-based mortgages.
2. The LTV ratio refers to the ratios of new mortgages approved during the last month of each quarter.
3. The data series of mortgage loans from January 2017 to April 2020 have been revised due to categorisation issues of the data submitted by AIs earlier. The historical values of the LTV ratio and debt-service index for the relevant periods have therefore been revised accordingly.

Sources: HKMA and staff estimates.

Although the household debt-to-GDP ratio has been a widely-used indicator in evaluating household financial position, a full assessment requires the additional consideration of the entirety of the household balance sheet, including the level of assets and the composition of assets and liabilities. In our assessment, we find that in Hong Kong, the household net worth-to-liabilities ratio stood at 12.2 times in 2018 (UK: 5 times, Singapore: 6 times, US: 6 times, Japan: 8 times). Also, the safe assets-to-liabilities ratio for Hong Kong's household sector stayed high at 3.04 times (US: 1 time; UK: 1 time; Singapore: 1 time, Japan: 3 times). Both ratios are at high levels and also higher than most other developed economies, suggesting that Hong Kong's households, on aggregate, are financially sound and have a strong buffer to cushion potential financial and economic shocks.

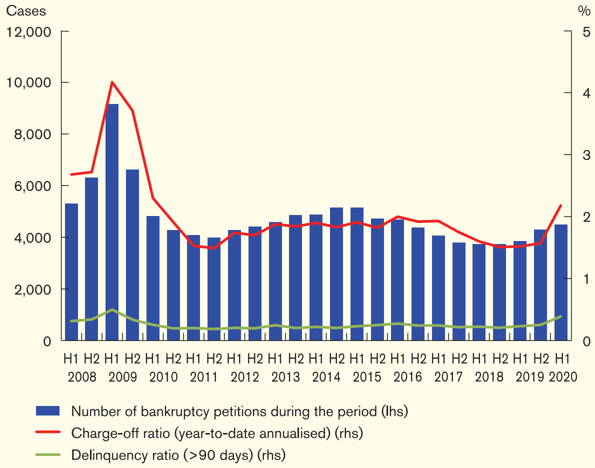
The lower domestic interest rates and the mortgage principal moratoria offered by some banks in Hong Kong may have alleviated household debt servicing burdens in the near term. However, as the unemployment rate has risen sharply amid the deepening economic recession, a decline in household income could offset the positive impact of the two factors mentioned above. In particular, the debt-service index of new mortgages[49], which is compiled based on various aggregate data including average household income, average amount of mortgage loans and mortgage rates, increased to 56.2 in the second quarter of 2020 from 53.0 in the last quarter of 2019 (the red line in Chart 5.15), reflecting partly a decline in average household income. A sensitivity test shows that the index could rise further to 62.4 if household income were to decrease further by 10%, other things being constant.[50] Therefore, banks should stay alert to the risks associated with a rising level of household debt-servicing burden.

49 It is defined as the ratio of estimated average mortgage payments to median household income based on various aggregate data. A higher value of the debt-service index indicates there is either a drop in average household income, or an increase in interest rates, or an increase in the average mortgage loan amount drawn by households. Historical movements in the index suggest that a sharp rise in the index may be associated with a deterioration in the asset quality of household debt. By construction, the level of the debt-service index may not be strictly comparable with that of the average DSR of new mortgages approved which is directly surveyed from AIs.

50 The assumption of a 10% decrease in household incomes resembles what happened during the Asian financial crisis.

The number of bankruptcy petitions continued to rise (Chart 5.16) alongside the rising unemployment rate during the first half of 2020. The annualised credit card charge-off ratio rose to 2.18% in the second quarter of 2020 and the delinquency ratio increased to 0.39%, as the economic impact of the COVID-19 outbreak took hold.

Chart 5.16
Charge-off ratio and delinquency ratio for credit card lending and bankruptcy petitions

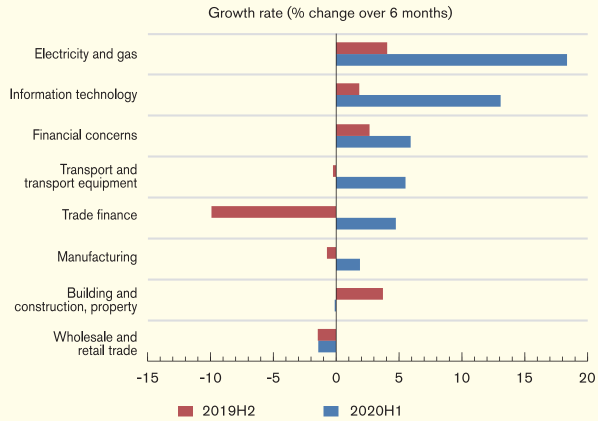


Sources: Official Receiver's Office and HKMA.

Corporate exposure[51]

To alleviate corporates' funding pressure amid the economic hardship, the HKMA and the banking sector have joined forces to introduce a host of measures to support corporates (particularly small-and-medium-sized enterprises (SMEs) in hard-hit sectors)[52]. Partly reflecting the effect of these measures, domestic corporate loans (including trade finance) grew by 3.0% in the first half of 2020, moderately faster than the 1.1% in the preceding six months. Indeed, loan growth for many economic sectors has accelerated. Loans extended to transportation, trade financing and manufacturing sectors, which have been hard hit by the pandemic, resumed positive growth during the first half of 2020, while loans for the wholesale and retail trade sector continued to decline (Chart 5.17).

Chart 5.17
Growth in domestic corporate loans by selected sectors



Source: HKMA.

The demand-side survey on SMEs' credit conditions for the second quarter of 2020 shows that 36% of the respondents perceived credit approval as "more difficult" relative to six months ago, up from 31% recorded in the first quarter (Chart 5.18). The increase in the percentage was mainly contributed by SMEs that did not apply for, or enquire about, new credit during the quarter. However, among those who did apply or made enquiries, the percentage of respondents perceiving a more difficult credit approval stance remained stable. Therefore, the perception of a more difficult credit approval stance may not necessarily reflect the actual difficulties faced by SMEs in obtaining bank credit, because the perception could be affected by a number of factors, such as media/news reports, business conditions and the opinions of relatives and friends. Despite the worsened perception of the credit approval stance of banks, SMEs' credit conditions showed signs of improvement. During the second quarter, 5% of the respondents with existing credit lines indicated a tighter stance by banks, notably

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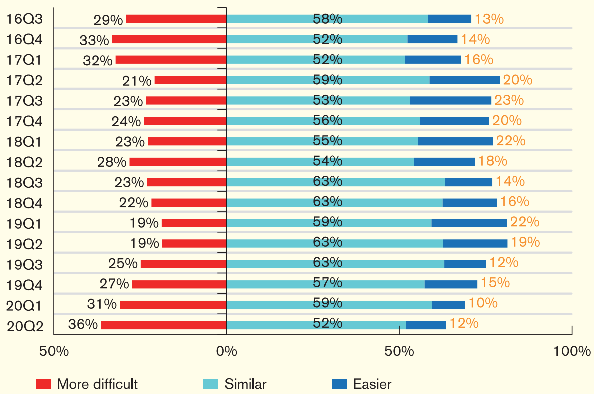
51 Excluding interbank exposure. At the end of June 2020, the share of corporate loans in domestic lending was 68.3%.

52 The HKMA has set up a dedicated webpage to facilitate public understanding of measures by the HKMA and the banking sector to support SMEs and individuals amid the COVID-19 outbreak. More information on these measures are available from this webpage (https://www.hkma.gov.hk/eng/key-functions/banking/banking-regulatory-and-supervisory-regime/riding-out-the-covid-19-challenge/).

down from 17% in the first quarter of 2020 and much lower than the high level of 32% registered in the third quarter of 2019 (Chart 5.19).

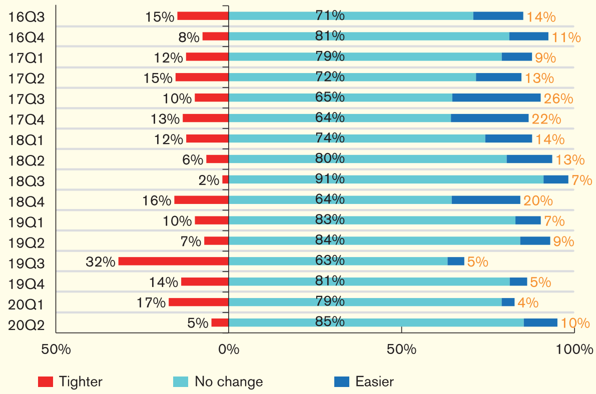
In response to the COVID-19 outbreak, a number of enhancements have been introduced under the SME Financing Guarantee Scheme to support SMEs. These include raising the maximum loan amount, extending the guarantee period, lowering the guarantee fee, and offering a principal moratorium under the 80% Guarantee Product. The new 90% Guarantee Product was also introduced in mid-December 2019 to provide additional support to SMEs and those with relatively less operating experience. To further enhance the cash-flow support to enterprises affected by the COVID-19 outbreak, the Special 100% Loan Guarantee was introduced in early 2020. This special guarantee differs from the 80% and 90% Guarantee Products, in that the funding is provided by the Hong Kong Mortgage Corporation Limited (HKMC) and not by the banks. With the solid backing from the HKMC, banks can focus on whether the applicant meets the scheme's criteria, without having to worry about commercial justifications or claims processing. This has significantly expedited the approval process and it is expected the relief measures will continue to help alleviate SMEs' cash-flow pressures and overcome the difficulties ahead.

Chart 5.18
SMEs' perception of banks' credit approval stance relative to six months ago



Note: Excluding respondents who answered "no idea / don't know".
Source: HKMA.

Chart 5.19
SMEs' reported change in banks' stance on existing credit lines

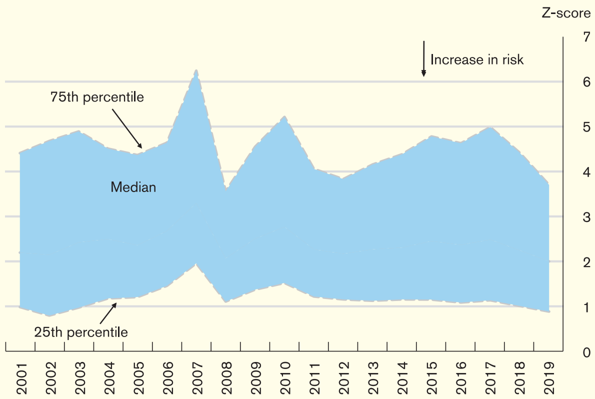


Note: Only cover respondents with existing credit lines.
Source: HKMA.

Apart from the HKMC's SME Financing Guarantee Scheme to support SMEs, the HKMA has been in parallel taking measures to alleviate cash-flow pressure of enterprises. For instance, the HKMA has launched the "Pre-approved Principal Payment Holiday Scheme" in April 2020, in which all loan principal payments of a wide range of corporate borrowers – those with an annual business turnover not higher than HK$800 million and without bank loans overdue for 30 days or more – falling due between 1 May and 31 October 2020 have been pre-approved for automatic deferment by six months (90 days for trade loans). Considering that the COVID-19 outbreak has yet to subside in many parts of the world, the HKMA announced in September 2020 that all loan principal payments falling due between 1 November 2020 and 30 April 2021 will be further extended by another six months (90 days for trade loans). Up to the end of July 2020, adding up the statistics on the Scheme and those on other corporate relief initiatives rolled out by banks, more than 43,000 cases of principal payment holidays or other forms of relief have been granted by banks, amounting to more than HK$530 billion.

Some indicators suggest that the credit risk of corporates has deteriorated slightly amid the weakened global and domestic economic environment. Based on accounting data for all non-financial corporates listed in Hong Kong, the Altman's Z score (a default risk measure for non-financial corporates) decreased at the end of 2019, suggesting a deterioration in the financial health of these corporates (Chart 5.20). Their debt servicing ability, as indicated by the weighted average interest coverage ratio (ICR) (the green line in Chart 5.21), also deteriorated mildly.

Chart 5.20
Altman's Z-score of listed non-financial corporates in Hong Kong

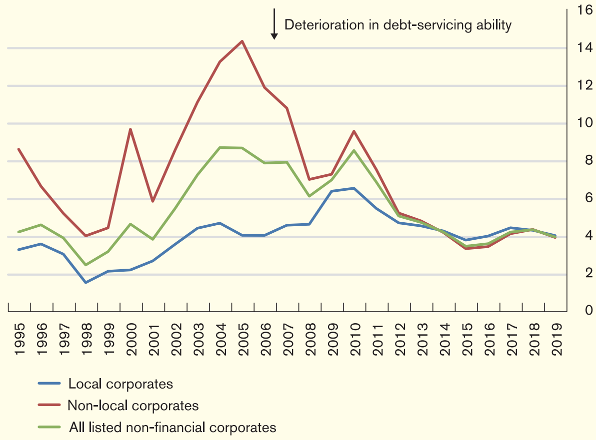


Notes:
1. All non-financial corporates listed on the Hong Kong Stock Exchange are selected.
2. Figures are calculated based on information up to end-August 2020.

Source: HKMA staff calculation based on estimates compiled by Bloomberg.

Nevertheless, corporate leverage continued to trend down. The weighted average debt-to-equity ratio, a common measure of corporate leverage, saw a modest decline driven mainly by non-local corporates (the red line in Chart 5.22).

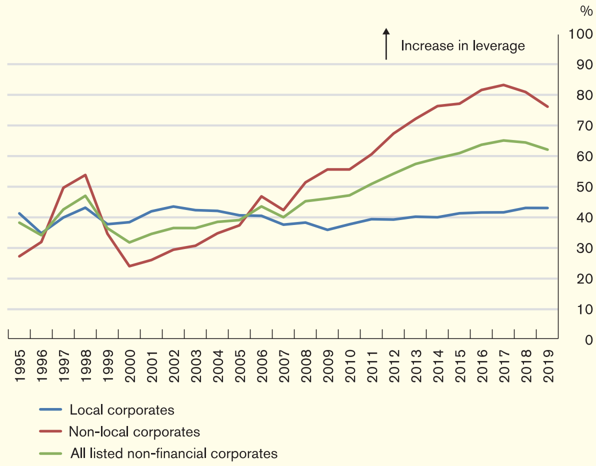
Chart 5.21
Interest coverage ratio of listed non-financial corporates in Hong Kong



Notes:
1. Weighted average figures.
2. The ICR is calculated by the earnings before interest and tax (EBIT) divided by the total interest expenses. A lower value indicates deterioration of debt-servicing ability.
3. All non-financial corporates listed on the Hong Kong Stock Exchange are selected. Local and non-local corporates refer to listed firms that are domiciled in and outside Hong Kong, respectively.
4. Figures are calculated based on information up to end-August 2020.
5. Hong Kong Financial Reporting Standard (HKFRS) 16, which became effective in January 2019, requires that firms as lessees to report their original rental expenses under depreciation of right-of-use asset and interest expense on lease liabilities. As such, for 2019, the adjusted EBITs and the total interest expenses will respectively be calculated as EBITs minus interest expense on lease liabilities, and total interest expenses minus interest expense on lease liabilities, for the purpose of comparison with historical figures.

Source: HKMA staff estimates based on data from Bloomberg.

Chart 5.22
Leverage ratio of listed non-financial corporates in Hong Kong



Notes:
1. Weighted average figures.
2. The leverage ratio is defined as the ratio of debt to equity. A higher value indicates higher leverage.
3. All non-financial corporates listed on the Hong Kong Stock Exchange are selected. Local and non-local corporates refer to listed firms that are domiciled in and outside Hong Kong, respectively.
4. Figures are calculated based on information up to end-August 2020.
5. Under HKFRS 16, firms as lessees will also recognise their operating leases with terms more than 12 months on-balance sheet. Specifically, the operating leases will be reported under "lease liability" items. As such, for 2019 the adjusted debts for listed corporates are calculated as total borrowings minus total leases liabilities for the purpose of comparison with historical figures, whenever items for "leases liabilities" are reported.

Source: HKMA staff estimates based on data from Bloomberg.

It should be noted that due to the time lag for the availability of accounting data, the negative impact of the COVID-19 outbreak cannot be assessed in the above analysis. To shed light on this issue, Box 4 analyses corporates' funding and default risks under a recession scenario with a sharp decline in corporate revenue among economic sectors.

The analysis shows that while corporates in Hong Kong may see higher default risks due to declines in revenue and thus net cash buffers amid the pandemic, the severity of the impact would vary across sectors. The analysis also finds that how far firms can roll over their short-term debt under the revenue shock is a key determinant of the funding and default risks. This finding suggests that maintaining stable credit flows to support the real economy is particularly important in such a difficult situation. In this regard, the relief measures taken by the HKMA and the banking sector should help corporates, particularly SMEs to ride through this difficult period.

Mainland-related lending and non-bank exposures

The banking sector's total Mainland-related lending increased by 5.0% to HK$4,790 billion at the end of June 2020 (17.2% of total assets), from HK$4,564 billion (16.8% of total assets) at the end of 2019 (Table 5.C). Other non-bank exposures increased by 3.9% to HK$1,607 billion (Table 5.D).

Table 5.C
Mainland-related lending

HK$ bn	Sep 2019	Dec 2019	Mar 2020	Jun 2020
Mainland-related loans	4,625	4,564	4,765	4,790
Mainland-related loans excluding trade finance	4,296	4,271	4,435	4,463
Trade finance	330	292	330	326
By type of AIs:				
Overseas incorporated AIs	1,923	1,880	1,973	1,985
Locally incorporated AIs*	1,983	1,959	2,060	2,087
Mainland banking subsidiaries of locally incorporated AIs	720	725	732	718
By type of borrowers:				
Mainland state-owned entities	1,906	1,836	1,993	2,036
Mainland private entities	1,286	1,288	1,313	1,288
Non-Mainland entities	1,433	1,440	1,460	1,466

Notes:
1. *Including loans booked in Mainland branches of locally incorporated AIs.
2. Figures may not add up to total due to rounding.
Source: HKMA.

Table 5.D
Other non-bank exposures

HK$ bn	Sep 2019	Dec 2019	Mar 2020	Jun 2020
Negotiable debt instruments and other on-balance sheet exposures	1,102	1,125	1,184	1,202
Off-balance sheet exposures	452	421	408	404
Total	**1,554**	**1,547**	**1,592**	**1,607**

Note: Figures may not add up to total due to rounding.
Source: HKMA.

The asset quality of banks' Mainland-related lending showed some deterioration in the first half amid the COVID-19 outbreak. The gross CLR of Mainland-related lending of all AIs[53] increased to 0.94% at the end of June 2020 from 0.75% at the end of 2019.

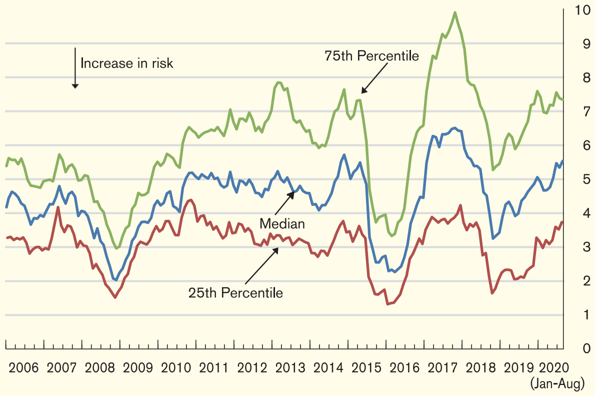
The distance-to-default (DTD) index[54], a forward-looking market-based indicator, showed that the default risk for the Mainland corporate sector has receded somewhat in recent months (Chart 5.23), mainly reflecting the improved market sentiment amid the aggressive policy stimulus. However, anecdotal evidence shows that the outlook of Mainland corporates may remain less optimistic.[55]

53 Figures cover AIs' Hong Kong offices and Mainland branches and subsidiaries.

54 The DTD is a market-based default risk indicator based on the framework by R. Merton (1974), "On the pricing of corporate debt: the risk structure of interest rates", *Journal of Finance*, Vol. 29, pages 449–470, in which equity prices, equity volatility, and companies' financial liabilities are the determinants of default risk. In essence, it measures the difference between the asset value of a firm and a default threshold in terms of the firm's asset volatility.

55 For instance, the fiscal year 2020 earnings per share consensus forecast of all Mainland listed firms at the end of June has been revised down by more than 10% compared with that of six months ago.

Chart 5.23
Distance-to-default index for the Mainland corporate sector



Note: DTD index is calculated based on the non-financial constituent companies (i.e. excluding investment companies and those engaged in banking, insurance and finance) of the Shanghai Stock Exchange 180 A-share index.
Source: HKMA staff estimates based on data from Bloomberg.

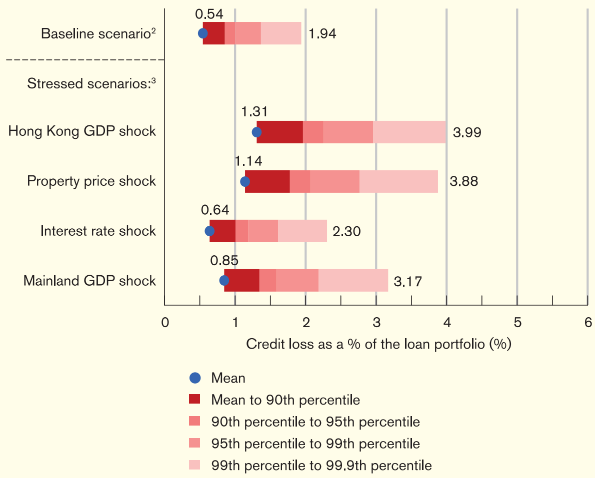
In view of the economic headwinds facing the Mainland economy arising from the uncertainties surrounding COVID-19, and the rising US-China tensions, banks should stay alert to the credit risk management of their Mainland-related exposures.

Macro stress testing of credit risk[56]

Results of the latest macro stress testing on retail banks' credit exposure suggest the Hong Kong banking sector remains resilient and should be able to withstand rather severe macroeconomic shocks similar to those experienced during the Asian financial crisis. Chart 5.24 presents the simulated future credit loss rate of retail banks in the second quarter of 2022 under four specific macroeconomic shocks[57] using information up to the second quarter of 2020.

Taking into account tail risk, banks' credit losses (at the confidence level of 99.9%) under the stress scenarios range from 2.30% (Interest rate shock) to 3.99% (Hong Kong GDP shock, which are significant, but smaller than the estimated loan loss of 4.39% following the Asian financial crisis.

Chart 5.24
The mean and value-at-risk statistics of simulated credit loss distributions[1]



Notes:
1. The assessments assume the economic conditions in 2020 Q2 as the current environment. The Monte Carlo simulation method is adopted to generate the credit loss distribution for each scenario.
2. Baseline scenario: no shock throughout the two-year period.
3. Stressed scenarios:
   Hong Kong GDP shock: reductions in Hong Kong's real GDP by 2.7%, 2.4%, 1.7%, and 1.6% respectively in each of the four consecutive quarters starting from 2020 Q3 to 2021 Q2.
   Property price shock: Reductions in Hong Kong's real property prices by an average of 12% in each of the four consecutive quarters starting from 2020 Q3 to 2021 Q2.
   Interest rate shock: A rise in real interest rates (HIBORs) by 300 basis points in the first quarter (i.e. 2020 Q3), followed by no change in the second and third quarters and another rise of 300 basis points in the fourth quarter (i.e. 2021 Q2).
   Mainland GDP shock: An average year-on-year real GDP growth rate of 2% for the four consecutive quarters starting from 2020 Q3.

Source: HKMA staff estimates.

5.4 *Systemic risk*

The COVID-19 pandemic has severely disrupted economic activities and clouded the global economic outlook. This together with the uncertainty over the rising US-China tensions, will continue to pose challenges for the Hong Kong banking sector.

The global economy has taken a heavy blow as lockdowns and social distancing measures to contain the pandemic have brought real

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56 Macro stress testing refers to a range of techniques used to assess the vulnerability of a financial system to "exceptional but plausible" macroeconomic shocks. The credit loss estimates presented in this report are obtained based on a revised framework from J. Wong et al. (2006), "A framework for stress testing banks' credit risk", *Journal of Risk Model Validation*, Vol. 2(1), pages 3–23. All estimates in the current report are not strictly comparable to those estimates from previous reports.

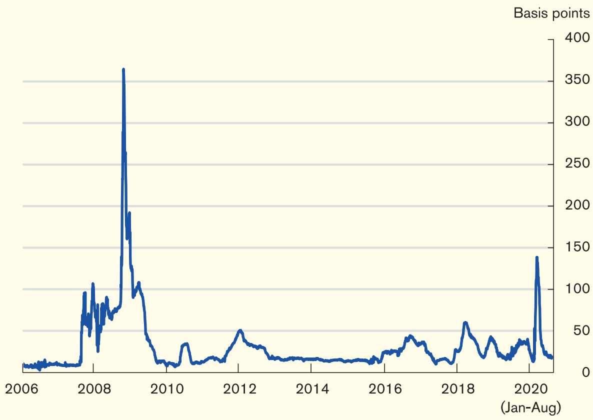
57 These shocks are calibrated to be similar to those that occurred during the Asian financial crisis, except the Mainland GDP shock.

activities to a halt. Corporates, particularly SMEs have been under immense pressure to manage their cash-flows, as their revenue declined sharply. Proactive relief measures taken by the public sector and the banks in Hong Kong have so far helped corporates to mitigate their funding risks. These have helped contain the systemic risk of a sharp rise in corporate defaults, at least in the short term.

However, corporates may face greater challenges if the pandemic persists. In particular, in a scenario of a prolonged pandemic, more firms could see rising leverage with persistent lower revenue, putting their solvency under the test. This could pose challenges for banks in managing the credit risks to their corporate loan portfolios. It remains highly uncertain when the pandemic will finally recede, therefore banks should assess the potential impact of this possible scenario on credit risk management.

Apart from the direct impact through the real sector, the pandemic can also affect the global banking sector through the financial channel. A case in point was the global US dollar liquidity stress triggered by the COVID-19 outbreak during March, which caused the spread between the three-month US dollar London Interbank Offered Rate (LIBOR) and its corresponding overnight index swap (OIS) rate[58] to widen significantly to the post-crisis high of 138 basis points in late-March (Chart 5.25). Although the stress gradually receded by the unprecedented policy actions taken by central banks[59], any renewed virus outbreak could lead to an acute tightening of financial conditions globally. So, banks in Hong Kong should assess the potential risks of an inward spillover of funding stress. Nevertheless, the Hong Kong banking sector was largely unaffected by the recent round of US dollar funding stress, underpinned by the banks strong and stable liquidity positions and the US Dollar Liquidity Facility provided by the HKMA.

Chart 5.25
Three-month US dollar LIBOR-OIS spreads



Source: Bloomberg.

The increased geopolitical tensions, especially between the US and Mainland China, also remain a key risk factor for observation. If tensions heightened between the US and Mainland China, this could have a potential negative impact on Hong Kong's economy.

If these external risks materialise and coincide with a resurgence in COVID-19 infections in Hong Kong, it could lead to a deeper recession. As discussed in earlier sections, banks' asset quality will be tested in such an adverse scenario, particularly in view of the potential weakening in debt-servicing abilities for households and corporates. Given the uncertainties over the

58 An OIS is an interest rate swap in which the floating leg is linked to an index of daily overnight rates. The two parties agree to exchange at maturity, on an agreed notional amount, the difference between interest accrued at the agreed fixed rate and interest accrued at the floating index rate over the life of the swap. The fixed rate is a proxy for expected future overnight interest rates. As overnight lending generally bears lower credit and liquidity risks, the credit risk and liquidity risk premiums contained in the OIS rates should be small. Therefore, the LIBOR-OIS spread generally reflects the credit and liquidity risks in the interbank market and is commonly employed as indicator for assessing the systemic liquidity risks in the short-term dollar funding market.

59 Worthy of special mention in the context of easing global US dollar funding shortage, is the Federal Reserve's USD liquidity facilities including cross-currency swap lines and the new repurchase agreement facility for foreign and international monetary authorities (FIMA repo facility).

extent to which these risk factors may persist, banks should carefully assess the potential longer-term impact on their asset quality.

However, the strong capital positions of the Hong Kong banking sector should provide strong buffers against asset quality deterioration.

The countercyclical capital buffer (CCyB) for Hong Kong

The CCyB is part of the internationally agreed Basel III standards and is designed to enhance the resilience of the banking sector against system-wide risks associated with excessive aggregate credit growth. This buffer can be deployed in times of a downturn, allowing banks to continue providing credit to support the real economy.

In setting the CCyB rate, the Monetary Authority considered a series of indicators (Table 5.E), including an "indicative buffer guide" (which is a metric providing a guide for CCyB rates based on the gap between the ratio of credit-to-GDP and its long term trend, and between the ratio of residential property prices to rentals and its long term trend)[60]. The setting of the CCyB for Hong Kong is however not a mechanical exercise and the Monetary Authority will always consider a broad range of reference indicators ("Comprehensive Reference Indicators") in addition to the indicative buffer guide.[61]

As the domestic economy is now facing headwinds, the Monetary Authority has decided to deploy this buffer to enhance banks' capacity in providing credit to support the real economy. By reducing the CCyB ratio twice to 1.0% as of 16 March 2020[62], these downward adjustments will allow banks to release approximately HK$700-800 billion in lending capacity.

For the latest situation, the indicative buffer guide, calculated based on the first quarter of 2020 data, signals a CCyB of 2.25% (after rounding down to the nearest multiple of 25 basis points)[63]. The projection based on all available data at the decision date suggests the indicative buffer guide would very likely signal a higher CCyB when all relevant data for the second quarter of 2020 become available.

Nevertheless, the information drawn from the series of Comprehensive Reference Indicators along with all relevant information available at the time of the decision in July 2020 suggest the economic environment in Hong Kong is still subject to a high level of uncertainty. Taking into account the timing and pace of economic recovery from COVID-19 remains uncertain, and many SMEs are still under stress, the Monetary Authority considered that it is more appropriate to keep the CCyB unchanged at 1.0% and continue to monitor the situation for the time being.

The Monetary Authority will continue to closely monitor credit and economic conditions in Hong Kong and the CCyB ratio will be reviewed on a quarterly basis or more frequently.

60 The credit-to-GDP gap is the gap between the ratio of credit to GDP and its long-term trend, while the property price-to-rent gap is the gap between the ratio of residential property prices to rentals and its long-term trend.

61 These included measures of bank, corporate and household leverage; debt servicing capacity; profitability and funding conditions within the banking sector and macroeconomic imbalances.

62 Further details and the considerations underlying these decisions may be found in the Announcement of the CCyB to AIs on 14 October 2019 and on 16 March 2020 respectively (https://www.hkma.gov.hk/eng/key-functions/banking/banking-legislation-policies-and-standards-implementation/countercyclical-capital-buffer-ccyb/).

63 According to section 3.2.5 of the HKMA's SPM CA-B-1, the CCyB rate will be expressed in multiples of 25 basis points (without rounding up). Thus the indicative buffer guide will signal an extant CCyB rate to increase or decrease in multiple of 25 basis points.

Table 5.E
Information related to the Hong Kong jurisdictional CCyB rate

	29-Jan-20	16-Mar-20	07-Jul-20
Announced CCyB rate	2.0%	1.0%	1.0%
Date effective	29/01/2020	16/03/2020	07/07/2020
Indicative buffer guide	0.9%	1.9%	2.3%
Basel Common Reference Guide	2.5%	2.5%	2.5%
Property Buffer Guide	0.3%	1.2%	1.8%
Composite CCyB Guide	0.9%	1.9%	2.3%
Indicative CCyB Ceiling	None	None	None
Primary gap indicators			
Credit/GDP gap	19.4%	21.2%	36.4%
Property price/rent gap	2.9%	5.7%	7.7%
Primary stress indicators			
3-month HIBOR spread* (percentage points)	0.37%	0.38%	0.61%
Quarterly change in classified loan ratio (percentage points)	-0.02%	-0.03%	0.06%

Notes:
1. The values of all CCyB guides, the Indicative CCyB Ceiling and their respective input variables are based on public data available prior to the corresponding review/announcement date, and may not be the most recent available as of each quarter end (refer to SPM CA-B-1 for explanations of the variables). If there is a CCyB announcement, the date of the announcement is shown at the top of the respective column. If there is no CCyB announcement, the quarter in which a CCyB review takes place (normally close to quarter end) is shown at the top of the column.
2. * Following a review of the appropriate risk-free rate benchmark (previously identified as the 3-month OIS rate), the HKMA has decided to amend the definition of the interbank market spread to the difference between the 3-month HIBOR and 3-month Exchange Fund Bill yield, effective from April 2017.

Source: HKMA.

Key performance indicators of the banking sector are provided in Table 5.F.

Table 5.F
Key performance indicators of the banking sector[1] (%)

	Jun 2019	Mar 2020	Jun 2020
Interest rates			
1-month HIBOR fixing[2] (quarterly average)	2.04	1.82	1.02
3-month HIBOR fixing (quarterly average)	2.11	1.99	1.35
BLR[3] and 1-month HIBOR fixing spread (quarterly average)	3.09	3.18	3.98
BLR and 3-month HIBOR fixing spread (quarterly average)	3.02	3.01	3.65
Composite interest rate[4]	0.95	0.95	0.71
		All AIs	
Balance sheet developments[5]			
Total deposits	0.4	0.0	2.2
Hong Kong dollar	1.1	-0.1	2.7
Foreign currency	-0.4	0.2	1.8
Total loans	1.8	2.8	0.2
Domestic lending[6]	2.3	3.4	-0.8
Loans for use outside Hong Kong[7]	0.8	1.6	2.5
Negotiable instruments			
Negotiable certificates of deposit (NCDs) issued	1.1	6.7	-0.7
Negotiable debt instruments held (excluding NCDs)	1.1	-3.2	5.2
Asset quality			
As a percentage of total loans[8]			
Pass loans	98.12	97.79	97.53
Special mention loans	1.31	1.59	1.67
Classified loans[9] (gross)	0.57	0.62	0.79
Classified loans (net)[10]	0.26	0.31	0.43
Overdue > 3 months and rescheduled loans	0.39	0.43	0.49
Classified loan ratio (gross) of Mainland related lending[11]	0.70	0.73	0.94
Liquidity ratios (consolidated)			
Liquidity Coverage Ratio — applicable to category 1 institutions (quarterly average)	152.8	160.4	156.5
Liquidity Maintenance Ratio — applicable to category 2 institutions (quarterly average)	54.6	56.8	57.2
Net Stable Funding Ratio — applicable to category 1 institutions	132.2	130.0	133.1
Core Funding Ratio — applicable to category 2A institutions	135.8	135.1	138.1
		Retail banks	
Profitability			
Loan impairment charges as a percentage of average total assets (year-to-date annualised)	0.05	0.09	0.12
Net interest margin (year-to-date annualised)	1.62	1.51	1.37
Cost-to-income ratio (year-to-date)	38.0	39.7	41.9
		Surveyed institutions	
Asset quality			
Delinquency ratio of residential mortgage loans	0.02	0.03	0.04
Credit card lending			
Delinquency ratio	0.23	0.35	0.39
Charge-off ratio — quarterly annualised	1.58	1.69	2.82
— year-to-date annualised	1.52	1.69	2.18
		All locally incorporated AIs	
Capital adequacy (consolidated)			
Common Equity Tier 1 capital ratio	16.3	16.0	16.6
Tier 1 capital ratio	18.2	18.0	18.7
Total capital ratio	20.6	20.1	20.7
Leverage ratio	8.1	8.1	8.2

Notes:
1. Figures are related to Hong Kong offices only except where otherwise stated.
2. The Hong Kong Interbank Offered Rates are released by the Hong Kong Association of Banks.
3. With reference to the rate quoted by The Hongkong and Shanghai Banking Corporation Limited.
4. The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest-rate-sensitive liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and all other liabilities that do not involve any formal payment of interest but the values of which are sensitive to interest rate movements (such as Hong Kong dollar non-interest bearing demand deposits) on the books of banks. Further details can be found on the HKMA website.
5. Quarterly change.
6. Loans for use in Hong Kong plus trade finance.
7. Including "others" (i.e. unallocated).
8. Figures are related to all AIs' Hong Kong offices, as well as locally incorporated AIs' overseas branches and major overseas subsidiaries.
9. Classified loans are those loans graded as "substandard", "doubtful" or "loss".
10. Net of specific provisions/individual impairment allowances.
11. Figures are related to all AIs' Hong Kong offices, as well as locally incorporated AIs' Mainland branches and subsidiaries.

Box 4
Effect of COVID-19 on the funding and solvency risks of non-financial corporates in Hong Kong

Introduction

The threat of COVID-19 and the resulting social distancing measures have severely disrupted a wide range of economic activities, which have led to a deepening of the economic recession in Hong Kong.[64] The sharp reduction in economic activities has caused a plunge in corporate revenue, posing downward pressures on their cash-flows. As funding conditions of firms worsen, risks of corporate insolvency could be on the rise.

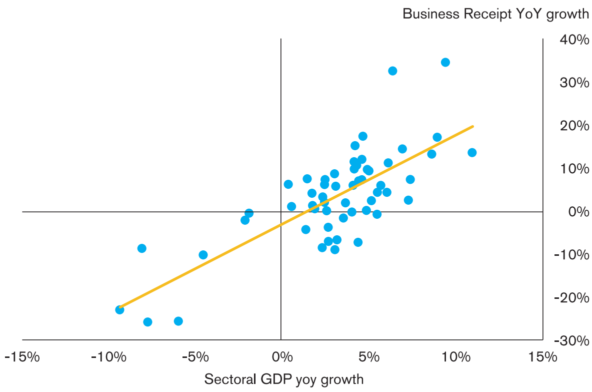
Against this background, this box aims to shed light on the following questions: (1) which sectors in Hong Kong will be more affected by the revenue shocks amid COVID-19; (2) to what extent the revenue shocks will affect the funding profile of firms; (3) how will the funding risk translate into a rise in default risk? (4) how relief programmes, such as the Pre-approved Principal Payment Holiday Scheme (PPPHS), can mitigate the rise in default risk; and what are the implications for banking sector resilience?

To answer these questions, we draw on the latest available balance sheet data of all local non-financial corporates (NFCs) listed in Hong Kong[65] to assess their funding and insolvency risks under a recession scenario where the real GDP of Hong Kong is assumed to drop hypothetically by 9% in 2020. Broadly speaking, the analysis comprises two parts. The first part estimates sector-specific revenue shocks based on historical relationships between GDP growth and firms' revenue. The second part assesses the impact of revenue shocks on the funding and insolvency risks of firms.

The severity of revenue shock across sectors under the scenario

In general, firms' business receipt (a close proxy of revenue) at the sectoral level is positively correlated with sectoral GDP growth (for instance, see Chart B4.1 for the transportation sector). Based on such historical relationships and our assumption on sectoral GDP growth[66] under the recession scenario, we can estimate the revenue shock for the individual sectors.[67]

Chart B4.1
Historical relationship between sectoral GDP and business receipt for the transportation sector



Source: C&SD.

Table B4.A summarises the estimation results. Based on the size of the estimated revenue shock, we classify sectors into two groups – hardest-hit sectors and others, and present their range estimates. Hardest-hit sectors include transportation, accommodation & food services, retail trade and wholesale & trade sectors. Under

64 Hong Kong's real GDP contracted sharply by around 9% year on year in the first half of 2020.

65 The sample includes 599 local NFCs listed in Hong Kong. To better represent, SMEs, listed firms with annual turnover greater than HK$800 million were excluded from the analysis. The results are qualitatively similar if these larger firms are included in the analysis.

66 The sectoral GDP growth paths are estimated based on their historical relationship with overall GDP growth.

67 A simple regression model is first employed that relates the quarterly year-on-year growth of business receipt index of a sector with the corresponding year-on-year growth in sectoral GDP contemporaneously. The revenue shock for the sector is then computed by applying the assumed path of the sectoral GDP growth rate to the model estimates under the recession scenario.

this recession scenario, it is estimated that their revenue in 2020 will drop by a range of between 24% and 77% year-on-year. For the remaining sectors, the decline in revenue would be significantly smaller in a range of between 4% and 14%.

Table B4.A
Estimated sectoral revenue shocks under the recession scenario

	Estimated yoy decline in revenue in 2020
Hardest-hit sectors	24% to 77%
Other sectors	4% to 14%

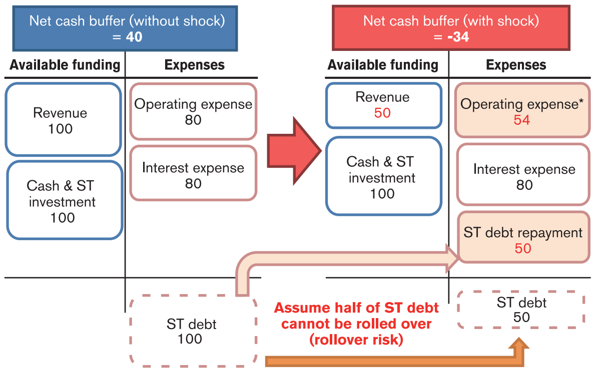
Note: Hardest-hit sectors include transportation, accommodation & food services, retail trade and wholesale & trade.
Source: HKMA staff estimates based on data from C&SD.

Impact of revenue shocks on corporates' funding and solvency risks

To assess how far firms' funding and solvency risks would be affected by the estimated revenue shock, we follow a similar approach adopted by the Bank of England and Banerjee et al. (2020) to examine firms' "net cash buffer" (NCB).[68] The NCB is defined as the sum of revenue and cash & short-term investment minus operating expenses, interest expenses and repayment of debt maturing within the year. By definition, a negative NCB indicates a higher funding risk, as firms are more likely to have insufficient funding to cover their expenses within a one-year horizon.

To illustrate how a firm's NCB is affected under the recession scenario, Chart B4.2 provides an example of a hypothetical firm with a 50% drop in revenue. The left hand side of the chart presents the financial position of the firm without the revenue shock, whereas the right hand side shows the financial position given the shock. In this example, with the $50 drop in the firm's revenue, the available funding (i.e. revenue plus cash & short-term investment) of the firm would drop from $200 to $150.

Chart B4.2
An illustrative example for the impact of a 50% revenue shock on a firm's net cash buffer



On the expenses side, two key assumptions are applied when estimating the NCB, which are related to (1) the extent of a fall in operating expenses; and (2) the ability of the firm to roll over its short-term debt:[69]

- For (1), firms are assumed to adjust their operating expenses in response to the revenue decline. But, due to rental and other fixed costs, their operating expenses cannot be adjusted to the same extent of the revenue drop in the short run. Indeed, empirical estimates based on all local NFCs listed in Hong Kong also suggest that corporates on average cut 0.65% of their operating expenses in response to a 1% fall in revenue. By applying the estimated cost-income elasticity of 0.65 to our example, the hypothetical firm's operating expenses would be lowered by 32.5% (i.e. 50% x 0.65) to $54. The sharper decline in revenue than that of operating expenses would result in a net operating loss, thereby posing cash-flow pressure on the firm.

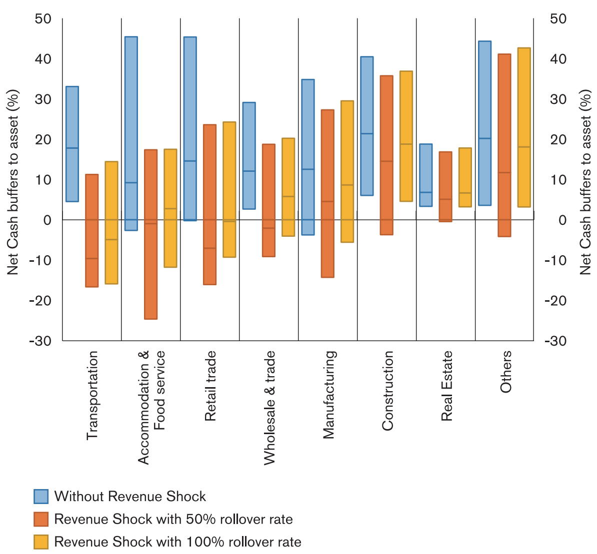
[68] For details, see Bank of England's Interim Financial Stability Report May 2020, and Banerjee et al. (2020), "Covid-19 and corporate sector liquidity", BIS Bulletins 10.

[69] Other assumptions are also made in computing the NCB ratio which include (1) keeping the amount of interest expenses unchanged at the level prior the shock; (2) cutting the firm's level of capital expenditures to a level equal to depreciation; (3) assuming firms would not pay out any dividend or conduct any share buybacks in order to preserve cash buffers; and (4) firms will not sell their assets to cover any funding shortage. These assumptions are largely based on historical relationships, which may not fully reflect potential impacts of various supportive measures in response to the pandemic.

- For (2), the ability of firms to roll over their short-term debt plays a key role in determining the funding risk of firms. This can be seen from the example. If the firm has difficulty in rolling over its debt maturing in 2020, such that it can only roll over half the debt and the remaining debt of \$50 is required to be repaid, the NCB would drop below zero to -\$34. By contrast, the NCB would have otherwise stayed positive at \$16 if the firm can fully roll over its short-term debt.

Based on these assumptions, we then estimate the NCB (scaled by firm's asset) of the sampled NFCs with and without the revenue shocks. Chart B4.3 shows the distribution of firms' NCB-to-asset ratio across different sectors. Each bar presents the upper and lower quartiles and the median of firms' NCB ratio. The blue bars represent the case without revenue shock. The orange and yellow bars are those with revenue shocks. The orange bars show the case where firms face difficulties in rolling over their short-term debt (i.e. only half the debt maturing in 2020 can be rolled over); the yellow bars show the case where firms can fully roll over their short-term debt.

Chart B4.3
NFCs' net cash buffer after revenue shock



Source: HKMA staff estimates based on data from S&P capital IQ.

Three key findings are worth highlighting. First, the systemic risk of funding shortage among firms in Hong Kong was not alarming before the outbreak of COVID-19. This can be seen by noting that a large share of NFCs registers positive NCB ratios without the revenue shock (i.e. blue bars in general stay above zero).

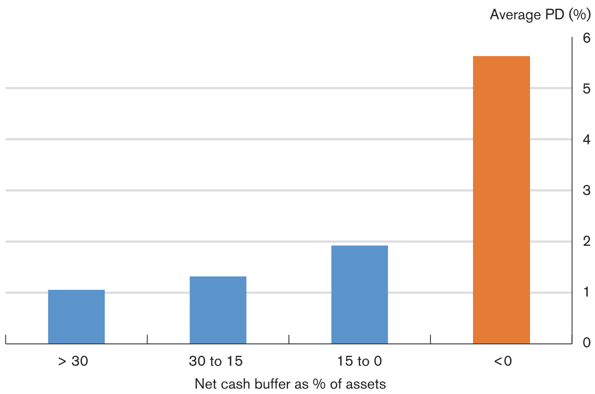
Second, firms in the four hardest-hit sectors are found to be particularly exposed to funding risks (i.e. negative NCB ratio) if firms face difficulty in rolling over their short-term debt and given the revenue shock. Specifically, the NCB ratio of the median firms in these sectors are found to be below zero, suggesting that it would be more common for firms in these sectors to face significant funding risks if they cannot fully roll over their debt.

Finally, the funding risk of firms stemming from the revenue shock could be mitigated notably if firms are able to fully roll over their short-term debt. In particular, the share of firms with negative NCB could reduce markedly by 11 percentage points to 29% if their short-term debt is assumed to be fully rolled over (i.e. yellow bars stay significantly higher than orange bars in the chart).

On the whole, the revenue shock arising from COVID-19 could adversely impact the funding profile of firms. This could further translate into higher default risks, especially for those with negative NCB. Chart B4.4 shows the historical nonlinear relationship between firms' market-based one-year ahead probability of default (PD)[70] and NCB ratio. In general, a lower net cash buffer ratio is associated with a higher default risk. Most notably, firms could see a significant jump in their PD should their NCB ratios drop from positive to negative.

70 The one-year ahead PD is obtained from Bloomberg's DRSK module. The one-year ahead PD refers to the probability that a firm will default over a one-year horizon from now. According to Bloomberg, the PD is derived from first estimating the DTD based on the standard Merton model. The estimated DTD is then transformed into one-year ahead PD by applying a non-linear mapping with the actual default rates, which addresses the potential issue of underestimation of default likelihood from the standard Merton model.

Chart B4.4
Historical relationship between firms' net cash buffer and market-based one-year ahead probability of default



Note: Average probability of default for firms in each group is segmented by their net cash buffer ratios.
Source: HKMA staff estimates based on data from S&P capital IQ and Bloomberg.

Based on this empirical relationship[71] and the estimated NCB for firms under the revenue shock, it is found that firms in the four hardest-hit sectors would see a sharp rise in their PD by around 300–400 basis points on average if they can only roll over half of their short-term debt. Yet, the rise in default risks could be sharply reduced to around 50–270 bps if firms' short-term debt is assumed to be rolled over fully.

The impact of relief programmes and implications for the banking sector

The rise in default risk caused by the COVID-19 revenue shocks can be significantly mitigated by an increase in the rollover rate of firms' short-term debt in the NCB model. Such an increase in the rollover rate can be achieved through various policy measures that sustain bank credit to firms, particularly SMEs.

The most notable examples of these measures are the PPPHS and the Special 100% Loan Guarantee under the SME Financing Guarantee Scheme (SFGS). The PPPHS was first announced in May 2020 by the HKMA and allows all corporate borrowers with annual turnover of HK$800 million or below, and without loans overdue for more than 30 days, to be granted a six-month principal payment holiday without need for borrowers to apply. The six-month holiday may be viewed as having guaranteed a 50% rollover rate on bank loans. In part based on the estimation results from the NCB model, the PPPHS will be extended for a further six months in November, resulting in a full year's principal payment holiday for eligible borrowers or, equivalently, a 100% rollover rate for their bank loans. With more than HK$530 billion of principal deferred under the PPPHS and other relief programme[72], the model estimates that the amount of job loss prevented by this six-month extension could be substantial. At the same time, the Special 100% Loan Guarantee under SFGS has provided more than HK$24 billion of government-guaranteed financing to SMEs since April 2020, which will also likely help ameliorate the rise in default rates of some corporates.

In arriving at the decision to extend the PPPHS, the HKMA has conducted thorough scenario analyses to quantify and assess the impact on banks under different deferment options. Our results show that even in extremely adverse scenarios, banks' prevailing capital and liquidity positions are still ample to support principal deferment programmes that total a full year.

71 To empirically map the impact of a change in firm's net cash buffer ratio onto its PD, a panel regression model is employed. The model takes into account the non-linear rise in PD when NCB ratios drop from positive to negative. It also accounts other important factors, including firm size, leverage, industry- and year-fixed effects.

72 For detail, please see below webpage. https://www.hkma.gov.hk/eng/key-functions/banking/banking-regulatory-and-supervisory-regime/riding-out-the-covid-19-challenge/.

Conclusion

There are two key implications from the analysis. Firstly, while corporates in Hong Kong will see higher default risks due to a worsening in their net cash buffers amid COVID-19, the severity of the impact will vary across sectors. Therefore, the potential increase in the credit risks of corporate loan portfolios will be different across banks, depending on their exposures to different sectors.

Secondly, our analysis shows that the roll over of firms' short-term debt plays a key role in determining their funding and default risks. This highlights the importance of relief measures and other funding supports by banks and the public sector. In response to the pandemic, the HKMA has been closely co-ordinating with the banking sector to ease the cash-flow pressure of firms, particularly SMEs. A host of measures, including the PPPHS and the 100% SFGS, have been launched and are well supported by the banking sector's strong capital and liquidity positions. These measures, together with the reduction in the regulatory reserve requirement on locally incorporated banks by 50% and the release of the CCyB by a total of 1.5%, should help Hong Kong's economy ride through this difficult period.

Glossary of terms

Aggregate Balance
The sum of balances in the clearing accounts and reserve accounts maintained by commercial banks with the central bank. In Hong Kong, this refers to the sum of the balances in the clearing accounts maintained by the banks with the HKMA for settling interbank payments and payments between banks and the HKMA. The Aggregate Balance represents the level of interbank liquidity, and is a part of the Monetary Base.

Authorized Institution (AI)
An institution authorized under the Banking Ordinance to carry on the business of taking deposits. Hong Kong maintains a Three-tier Banking System, which comprises licensed banks, restricted licence banks and deposit-taking companies.

Best Lending Rate
A benchmark interest rate that banks use to price loans. In Hong Kong, the Best Lending Rate is used as a base for quoting interest rates on mortgage loans.

Certificates of Indebtedness (CIs)
Certificates issued by the Financial Secretary under the Exchange Fund Ordinance, to be held by note-issuing banks as cover for the banknotes they issue.

Composite Consumer Price Index (CCPI)
The main consumer price index (CPI) for Hong Kong. The Census and Statistics Department compiles three separate CPI series relating to households in different expenditure ranges. The CPI(A) relates to about 50% of households in the relatively low expenditure range; the CPI(B) relates to the next 30% of households in the medium expenditure range; and the CPI(C) relates to the next 10% of households in the relatively high expenditure range. The Composite CPI is compiled based on the aggregate expenditure pattern of all of the above households taken together.

Composite Interest Rate
The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest-rate-sensitive liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and all other liabilities that do not involve any formal payment of interest but the values of which are sensitive to interest rate movements (such as Hong Kong dollar non-interest bearing demand deposits) on the books of banks. Data from retail banks, which account for the majority of the Hong Kong dollar deposits in the banking sector, are used in the calculation. It should be noted that the composite interest rate represents only average interest expenses. There are various other costs involved in the making of a loan, such as operating costs (e.g. staff and rental expenses), credit cost and hedging cost, which are not covered by the composite interest rate.

Convertibility Undertaking (CU)
An undertaking by a central bank or currency board to convert domestic currency into foreign currency and vice versa at a fixed exchange rate. In Hong Kong, the HKMA operates Convertibility Undertakings on both

the strong side and the weak side. Under the strong-side Convertibility Undertaking, the HKMA undertakes to buy US dollars from licensed banks at 7.75. Under the weak-side Convertibility Undertaking, the HKMA undertakes to sell US dollars at 7.85. Within the Convertibility Zone between 7.75 and 7.85, the HKMA may choose to conduct market operations consistent with Currency Board principles with the aim of promoting the smooth functioning of the money and foreign exchange markets.

Convertibility Zone

The Hong Kong dollar-US dollar exchange rate band, defined by the levels of the strong- and weak-side Convertibility Undertakings, within which the HKMA may choose to conduct market operations consistent with Currency Board principles.

Exchange Fund Bills and Notes (EFBNs)

Debt instruments issued by the HKMA for the account of the Exchange Fund. These instruments are fully backed by the foreign reserves. The HKMA has undertaken that new Exchange Fund paper will only be issued when there is an inflow of funds, thus enabling the additional paper to be fully backed by the foreign reserves. Since 1 April 1999, interest payments on Exchange Fund paper have been allowed to expand the Monetary Base. Additional Exchange Fund paper is issued to absorb such interest payments. This is consistent with the Currency Board discipline since interest payments on Exchange Fund paper are backed by interest income on the US dollar assets backing the Monetary Base.

Monetary Base

A part of the monetary liabilities of a central bank. The monetary base is defined, at the minimum, as the sum of the currency in circulation (banknotes and coins) and the balance of the banking system held with the central bank (the reserve balance or the clearing balance). In Hong Kong, the Monetary Base comprises Certificates of Indebtedness (for backing the banknotes issued by the note-issuing banks), government-issued currency in circulation, the balance of the clearing accounts of banks kept with the HKMA, and Exchange Fund Bills and Notes.

Money supply

The total stock of money available in the economy. Hong Kong has three measures of money supply: Money Supply definition 1 (M1) is defined as the sum of legal tender notes and coins held by the public plus customers' demand deposits placed with licensed banks. Money Supply definition 2 (M2) is defined as M1 plus customers' savings and time deposits with licensed banks plus negotiable certificates of deposit (NCDs) issued by licensed banks held outside the banking sector. Money Supply definition 3 (M3) is defined as M2 plus customers' deposits with restricted licence banks and deposit-taking companies plus NCDs issued by these institutions held outside the banking sector.

Nominal and Real Effective Exchange Rate (NEER and REER)

An indicator of the overall exchange rate value of the Hong Kong dollar against a basket of currencies of Hong Kong's principal trading partners. The nominal effective exchange rate (NEER) is a weighted average of the exchange rates between Hong Kong and its principal trading partners. The real effective exchange rate (REER) is obtained by adjusting the NEER for relative movements in the seasonally adjusted consumer price indices of those selected trading partners.

Abbreviations

1m moving average	One-month moving average
3m moving average	Three-month moving average
3m-on-3m	Three-month-on-three-month
7dma	Seven-day moving average
AC	All-Country
AB	Aggregate Balance
ad	Advertisement
AEs	Advanced economies
APP	Asset Purchase Programmes
AIs	Authorized institutions
AZ	Arizona
APs	Authorized Participants
BIS	Bank for International Settlements
bn	Billion
BLR	Best lending rate
bps	basis points
CAR	Capital Adequacy Ratio
CCPI	Composite Consumer Price Index
CCyB	Countercyclical capital buffer
CDs	Certificates of deposits
CET1	Common equity tier-one
CFR	Core Funding Ratio
ChiNext	The start-ups board in the Shenzhen Stock Exchange
CIs	Certificates of Indebtedness
CLR	Classified Loan Ratio
CNH	Offshore renminbi in Hong Kong
CNY	Onshore renminbi
COVID-19	Coronavirus Disease 2019
C&SD	Census and Statistics Department
CPI	Consumer Price Index
CSRC	China Securities Regulatory Commission

CU	Convertibility Undertaking
DFM	Dynamic Factor Model
DI	Direct investment
DSR	Debt-servicing ratio
DTD	Distance-to-default
EBIT	Earnings before interest and tax
EBITDA	Earnings before interest, taxes, depreciation and amortization
ECB	European Central Bank
EFBNs	Exchange Fund Bills and Notes
EM	Emerging-market
EMEs	Emerging Market Economies
EPS	Earnings per share
ETFs	Exchange traded funds
EU	European Union
EUR	Euro
Fed	Federal Reserve
FI	Financial Institutions
FIMA Repo Facility	Repurchase agreement facility for foreign and international monetary authorities
FL	Florida
FX	Foreign exchange
GBP	British Pound Sterling
GDP	Gross Domestic Product
HIBOR	Hong Kong Interbank Offered Rate
HK	Hong Kong
HKD	Hong Kong dollar
HKEx	The Hong Kong Exchanges and Clearing Limited
HKFRS	Hong Kong Financial Reporting Standard
HKMA	Hong Kong Monetary Authority
HKMC	Hong Kong Mortgage Corporation
HKPC	Hong Kong Productivity Council
HK$M3	Hong Kong dollar broad money supply
HSCEI	Hang Seng China Enterprises Index
HSI	Hang Seng Index
ICR	Interest Coverage Ratio

IFC	International Finance Corporation
IL	Illinois
IMF	International Monetary Fund
IPO	Initial Public Offering
IRRBB	Interest rate risk in the banking book
IT	Information technology
JPY	Japanese Yen
LCR	Liquidity Coverage Ratio
LIBOR	London Interbank Offered Rate
LERS	Linked Exchange Rate System
LMR	Liquidity Maintenance Ratio
LPR	Loan Prime Rate
lhs	Left-hand side
LR	Leverage Ratio
LTD	Loan-to-deposit
LTV	Loan-to-value
M&A	Mergers and acquisitions
mn	Million
MDBs	Multilateral Development Banks
MoF	Ministry of Finance
MRF	Mutual Recognition of Funds
MSCI	Morgan Stanley Capital International
NBER	National Bureau of Economic Research
NBS	National Bureau of Statistics
NCB	Net cash buffer
NCD	Negotiable certificate of deposit
NEER	Nominal effective exchange rate
NFCs	Non-financial corporates
NIM	Net interest margin
NPL	Non-performing loan
NSFR	Net Stable Funding Ratio
NY	New York
OIS	Overnight indexed swap
OTC	Over-the-counter
p.a.	Per annum
P2P	Peer-to-peer

PBoC	People's Bank of China
PCE	Personal consumption expenditure
PD	Probability of default
PMI	Purchasing Managers' Index
POE	Privately-owned enterprise
PPI	Producer Price Index
PPPHS	Pre-approved Principal Payment Holiday Scheme
PRC GAAP	Generally accepted accounting principles in China
qoq	Quarter-on-quarter
qoqa	Quarter-on-quarter annualised
R&VD	Rating and Valuation Department
REER	Real effective exchange rate
Repo	Repurchase operation
rhs	Right-hand side
RMB	Renminbi
ROA	Return on assets
ROE	Return on equity
RRR	Required reserve ratio
RTGS	Real Time Gross Settlement
SAFE	State Administration of Foreign Exchange
SDR	Special Drawing Rights
SEO	Seasoned equity offering
SFGS	SME Financing Guarantee Scheme
SHIBOR	Shanghai Interbank Offered Rate
SKEW	Chicago Board Options Exchange Skew Index
SMEs	Small and medium-sized enterprises
SOEs	State-owned enterprises
SPM	Supervisory Policy Manual
SSE	Shanghai Stock Exchange
ST	Special treatment
SWIFTs	Society for Worldwide Interbank Financial Telecommunication
S&P	Sale and Purchase Agreements of Building Units
S&P 500	Standard & Poor's 500 Index
th	Thousands
tn	trillion

TWI	Trade Weighted Index
TX	Texas
UK	United Kingdom
US	United States
USD	US dollar
VHSI	HSI Volatility Index
VIX	Chicago Board Options Exchange Market Volatility Index
wk	Week
WTO	World Trade Organisation
yoy	Year-on-year

Full text of this Report is available on the HKMA website at **www.hkma.gov.hk.**

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